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Handbook for Obtaining Chemical Use and Related Economic Information

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The handbook describes methods of finding chemical use and economic information in reference, on-line, and industry sources, and evaluates many current sources which contain information such as physical/chemical properties, chemical functions and applications, and production/consumption quantities.

Sections 1-3 describe steps that can be followed to learn basic information about the uses of a chemical and the economics of those uses, either by chemical or by use. Appendix A evaluates over 100 sources in a standard format that displays the type of information in the source, the means of access to the information, organization of the information, and limitations or difficulties in utilizing the sources. Appendices B- provide lists of sources for different kinds of information and lists of different kinds of sources.

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HANDBOOK FOR OBTAINING CHEMICAL USE AND RELATED ECONOMIC INFORMATION

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Wendy L. Byer, Susan Hunsicker and Angela Mazella of the ROMAR/TID staff provided substantive work in developing the list of sources and evaluating them from the viewpoint of their use in determining chemical uses and their format.

Laura R. Loeb ably performed the evaluation of on-line data sources and assisted in editing and rewrite.

Dr. Ralph Herbst, Jr. made a major contribution in the development of the methodology for searching sources in order to obtain use and related economic data.

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SECTION I. INTRODUCTION AND PURPOSE

To perform the various assessments of chemical substances and mixtures which are necessary to implement the Toxic Substances Control Act (TSCA), the Agency must often conduct a comprehensive search for toxicological and exposure information about a subject chemical or family of substances. In the event that insufficient information is available about the subject, TSCA provides EPA with the authority to require industry to develop, retain, or report information as necessary. Section 8(a) of TSCA authorizes EPA to promulgate rules under which manufacturers and processors must submit data that is reasonably necessary. The kinds of information about a chemical that may be required under section 8(a) include the names of manufacturers and processors, physical and chemical data, use and production quantity information, number of employees and workplace exposure levels, and the manner and method of disposal. To the extent feasible, TSCA instructs the Agency to not require reporting that is unnecessary or duplicative.

Therefore, while EPA may require the mandatory submission of needed information, a search for available data should precede regulatory action, to reasonably ensure that adequate information is not elsewhere available. The purpose of this handbook is to describe ways to search for the different types of information that are desired and thus assist new or inexperienced staff to develop strategies for researching chemical subjects. A second purpose is to list and evaluate a number of information sources that are available, to help researchers with any level of expertise to more quickly identify where the desired information is likely to be found.

A large number of existing information sources, both published and on-line, presently offer a great deal of information about specific chemicals and mixtures, families of substances, and the chemical and allied products industries. Much of the information the Office of Toxic Substances (OTS) routinely uses in various assessments, including economic analyses, material balance studies, and exposure assessments, can be found in sources available at the OTS Technical Information Center. However, to find the needed data may require searching through a number of data sources and piecing together bits of information which in themselves do not provide the information that is sought.

For many chemical subjects, an experienced researcher can quickly ascertain the kinds of information that probably can be found by searching through several well-known general sources to find only a couple of data elements. To find data of greater detail and specificity may require searching through sources that are published by or for specific industries. At times, a researcher with the right background can learn a great deal about a subject by investigating better-known analogs or alternatives. When all else fails, the needed information may only be available from the company that manufactures or processes the subject chemical. There are steps that an evaluator can take to find the maximum amount of information by carefully chosing the types of sources to search.

Of the many available information sources, some are useful for obtaining general information about specific chemicals while some of the information sources cover only a very specific subject area. Knowing which sources are more likely to yield the desired data may save researchers a great deal of time or point them in a more appropriate direction. In addition, such knowledge may assist OTS contract project officers to better direct the work of their contractors.

This handbook can aid EPA staff to more effectively use in-house and otherwise available resources. The handbook describes a simple methodology that can be followed to gather chemical use and related economic information and provides evaluations of many published and on-line sources of such information. The handbook may be used as a workbook to guide the evaluator through the methodologies for locating and accessing needed information, and as a reference manual that describes and evaluates the information sources.

1.1 DEFINITIONS

This handbook has been designed to provide the reader with a guide to the kinds of information sources available that can provide a wide variety of use and economic information that can be useful to EPA in its implementation of TSCA.

In evaluating a chemical for its potential hazard to health or the environment, a large amount of information on its toxicity, its effects on the environment and the extent to which it may be present in the environment must be acquired.

Its presence in the environment is usually a function of its economic activity. A measure of this activity is usually obtained by an analysis of a chemical's uses, the quantity of production, the quantity consumed in each of its use areas, and how and where both human and environmental exposure can occur.

The analysis of a chemical's economic activity requires the examination of a number of parameters:

- Uses (function and application)
- Quantity produced
- Quantity consumed by use area
- Market price
- Chemical alternates
- Manufacturers, distributors and processors
- Chemical and physical properties.

The specific uses of a chemical define the industrial, consumer and environmental areas into which a chemical is introduced.

Chemical use has been defined in several studies prepared for EPA as comprised of two aspects: function and application. The function of a chemical is the action it performs or for which it is specially suited. Examples of functions are anti-oxidants, chemical intermediates, surfactants.

The application of a chemical is the process or product in which a chemical substance is consumed. Examples of applications are the manufacture of paints, the manufacture of household detergents, the drilling of oil wells.

As an example of the utilization of use information, benzene has three principal functions: a chemical intermediate, a solvent, and as a gasoline additive.

As a chemical intermediate, basic exposure is limited primarily to plant areas and workers associated with either its production or its reaction to produce another chemical.

As a solvent, benzene could find both industrial and consumer applications. Industrial applications would tend to limit its use to an industrial site with potentially limited human and environmental exposure. Consumer applications would tend to imply broader human and environmental exposure.

As a gasoline additive, there is a potential of broad human and environmental exposure depending on how the product mixture is handled.

The quantities of a chemical that are produced and/or its consumption by use area provides another indication of the extent to which the chemical could impinge on humans and/or the environment. The greater the amount produced or consumed the greater is the potential for hazard that a chemical might have. It should be noted that a complete analysis for potential risk of hazard depends on the combination of information on the uses of a chemical with a variety of toxicity, health and environmental effects that a chemical has.

Market price, chemical alternates, the number (and names) of manufacturers, distributors and processors are useful tools in evaluating size of market, and the share of market by a given chemical and the extent of the economic effect on industry of a regulatory action.

1.2 ORGANIZATION OF HANDBOOK

This Handbook for Obtaining Chemical Use and Related Economic Information is presented in two parts:

Section II - Methods of Finding Chemical Economic Information

Section III - Sources of Chemical Use and Related Economic Information

The Methodology Section has been designed to provide the user with a step-by-step procedure for developing use and related economic information by employing information obtained directly from various publicly available sources or derived from such information.

The Information Sources Section consists of Appendices A through J containing many of the published and on-line sources of chemical use and related economic information. Each of these sources, arranged alphabetically in Appendix A, is evaluated by physical type, frequency of update, kinds of information present and overall utility. Additional access to sources is provided in arrangements by physical type, such as handbook or on-line database, in Appendix B and by each evaluated parameter of chemical use, such as function, application or price, in Appendices C through J.

SECTION II. METHODS OF FINDING CHEMICAL ECONOMIC INFORMATION

Chemical use and economic data are available to a greater or lesser extent in the open literature, depending on the relative importance of the chemical. Generally speaking, the more producers of a chemical there are, and the greater the volume sold, the larger will be the quantity of published information about that chemical, and the easier it will be to find.

When the chemical is produced by fewer than three producers, or is sold in small volumes, or is a recently commercialized chemical, use and economic data may not be as readily available and indirect or deductive means may be required to develop the desired use information.

The standard market research approach used by industry to find chemical use and related economic information is to turn first to the most general sources, and then proceed to more specific and indirect sources. The industrial market researchers often contact other companies, both producers and consumers, to obtain information that will enable them to understand better the market area they are studying.

This latter approach may not be open to the EPA investigator, although it is probable that a contractor would be forced to use this route.

There are two types of chemical use searches that an EPA investigator may be required to make:

(1) Only the chemical name is known, and the investigator must develop complete use and related economic data.

(2) The name, function and/or application of a chemical are known, and the investigator must develop economic and related information about it as well as alternate chemicals.

The overall search plan for these two types of searches is depicted in Exhibit 2-1. The first case, where only the chemical name is known, will follow the entire scheme starting with gathering background information and proceeding step-by-step to determining use and then market and economic data.

In the second case, the researcher would start with the known use, next obtain information on alternate chemicals and finally determine market-economic data for each of the alternates. If detailed information on each of the alternates is required, the investigator will return to the first step of the Search Flow -Gather background information and proceed in a step-by-step manner.

A discussion of each of these steps is presented in the following sections.

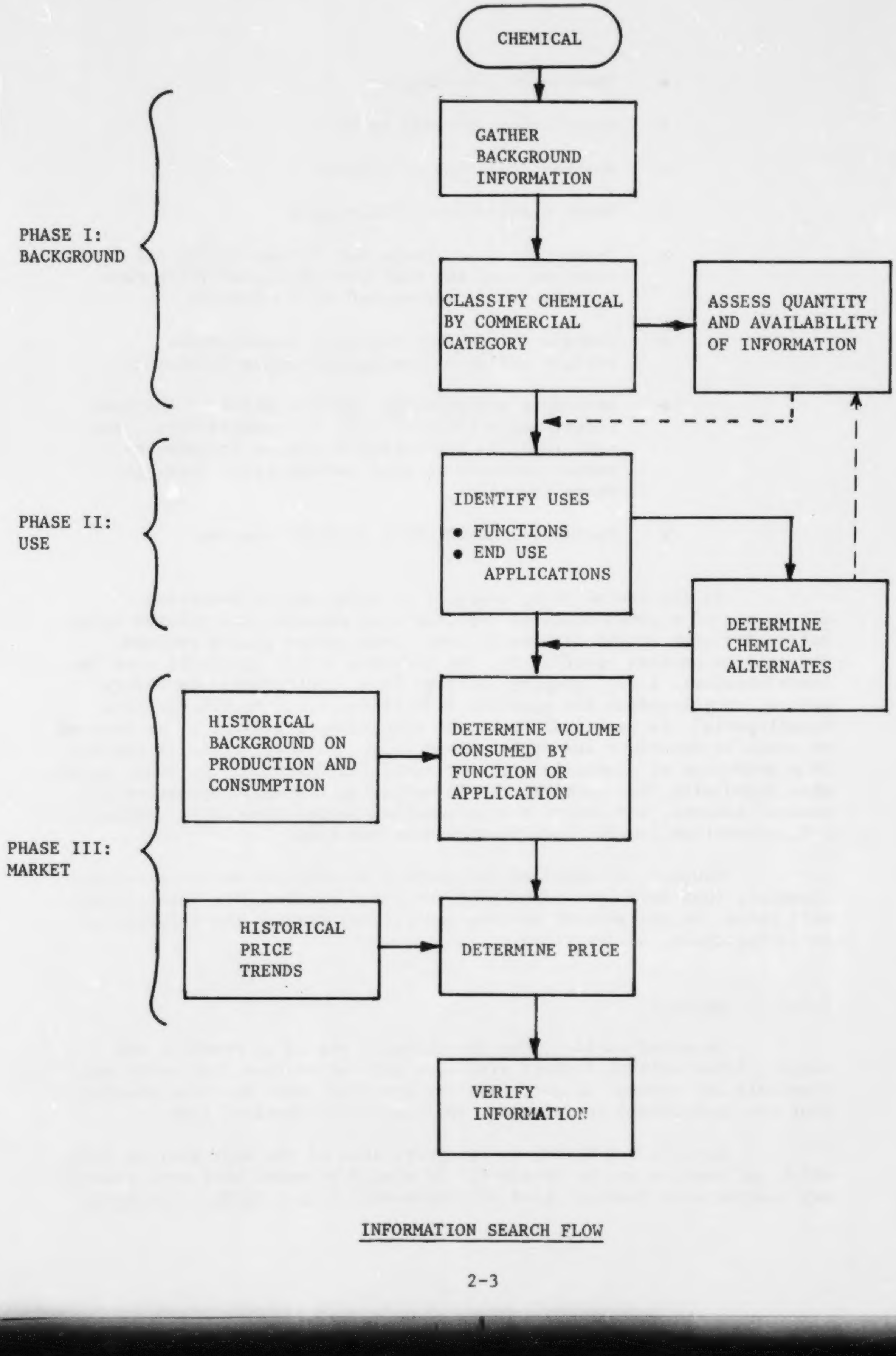
2.1 GATHER BACKGROUND INFORMATION: PHASE I

General sources can provide background information in such areas as physical/chemical properties, broad use areas, manufacturers, price, and quantity produced (or consumed). Not all of these data will be found in every general source. Some of the data given on use, price and quantity produced may be either very general in nature, very sketchy or old. Nonetheless, this information will give the investigator an overview of the subject, from which he/she will be able to select more specific search terms and more narrowly defined search areas. To determine more detailed information, it will be necessary to search a larger number of specific sources. The number and type depend on the availability of information for a specific chemical or class of chemicals, and the degree of thoroughness required.

The order of searching sources generally will be as follows, bearing in mind that the individual industry sources should be consulted only as a last resort, such as when verification or more up-to-date information must be obtained or because no information was found during the search of the publicly available sources:

- Handbooks and dictionaries
- Encyclopedia and textbooks

EXHIBIT 2-1


CHEMICAL
GATHER BACKGROUND INFORMATION
PHASE I: BACKGROUND
CLASSIFY CHEMICAL BY COMMERCIAL CATEGORY
ASSESS QUANTITY AND AVAILABILITY OF INFORMATION
PHASE II: USE
IDENTIFY USES
• FUNCTIONS
• END USE APPLICATIONS
DETERMINE CHEMICAL ALTERNATES
PHASE III: MARKET
HISTORICAL BACKGROUND ON PRODUCTION AND CONSUMPTION
DETERMINE VOLUME CONSUMED BY FUNCTION OR APPLICATION
HISTORICAL PRICE TRENDS
DETERMINE PRICE
VERIFY INFORMATION

INFORMATION SEARCH FLOW

- Government publications
- Directories, buyers' guides
- Business information sources
- Trade Association publications
- Trade journals: those not covered by the A & I services, and the most current issues which have not yet been incorporated in the indexes
- Company information sources: house organs, product bulletins and manufacturers literature
- Abstracts and indexes: on-line files of the most recent years (1970 +) will be searched first, for more specific and detailed sources followed by manual searches to give retrospective coverage, where required.
- Personal contacts with industry sources.

In the second case, where it is necessary to determine alternates of a given chemical together with economic and related information for each of the alternates, the investigator should proceed directly to sources specific for the function and/or application of the known chemical, i.e., category listings (e.g., lubricants) in buyers' guides, encyclopedias for specific industries (e.g., Modern Plastics Encyclopedia), in technical books and monographs organized by or devoted to specific functions and applications (e.g., paints), or in literature from producers of chemicals with the specified function. In other words, when faced with this problem, the investigator initially by-passes the general sources, and enters the information search flow (c.f., Exhibit 2-1. Information Search Flow) further down the line.

However, if detailed information is required on the alternate chemicals that have been identified, as noted earlier, the investigator will return to the general sources and proceed through the information gathering cycle, as described.

2.1.1 Sources

As noted earlier, the investigator who is to search a new subject (chemical) will start with more general sources that cover many chemicals and proceed to more industry specific, more detailed sources that are specialized by function, application or chemical type.

Exhibit 2-2 lists, by category, some of the best sources from which information can be obtained. It should be noted that some sources may contain more than one kind of information (e.g., USITC - Synthetic

EXHIBIT 2-2.

MOST FREQUENTLY USED SOURCES FOR GATHERING USE DATA ON CHEMICALS

2-2.1 Synonyms, CAS Registry Number and Structure and Physical-Chemical Properties

Dictionaries & Handbooks - Condensed Chemical Dictionary, Merck Index, CRC Handbook of Chemistry & Physics, SOCMA Handbook of Commercial Organic Chemical Names

On-line chemical dictionary files - Chemline (NLM), Chemname (Lockheed), Chemdex (SDC)

Registry of Toxic Effects of Chemical Substances (NIOSH)

Toxicology Data Bank (NLM)

2-2.2 Product Specifications

Faith, Keyes and Clark's Industrial Chemicals

SRI Chemical Economics Handbook

Kirk-Othmer Encyclopedia of Chemical Technology

Product bulletins, manufacturer's literature

2-2.3 Names of Producers, Processors and Distributors

Buyers' Guides (usually include distributors as well as producers): OPD, Chemicalweek

SRI Publications - Directory of Chemical Producers, Chemical Economics Handbook

USITC Synthetic Organic Chemicals

Chemical Marketing Reporter Profiles

Faith, Keyes & Clark's Industrial Chemicals

On-line data bases - Chemical Industry Notes, Predicasts files, Toxicology Data Bank, Organic Chemical Producers Data Base.

Thomas Register

EXHIBIT 2-2. (Continued)

2-2.4 Quantity of Chemical Produced and/or Sold

USITC Synthetic Organic Chemicals. U.S. Production and Sales - Annual Publication.

U.S. Bureau of the Census. Current Industrial Reports: Inorganic Chemicals - Annual Publication.

U.S. Bureau of Mines - Minerals Year Book.

SRI Publications - Chemical Economics Handbook - a Study of Industrial Data on Candidate Chemicals for Testing

Faith, Keyes & Clark's Industrial Chemicals

On-line databases: Chemical Industry Notes, Predicasts PROMT, Toxicology Data Bank, Organic Chemical Producers Database and CICIS

2-2.5 Price

USITC Synthetic Organic Chemicals, U.S. Production & Sales

Chemical Marketing Reporter - Weekly Price List, Chemical Profiles

SRI's Chemical Economics Handbook

On-line databases - Chemical Industry Notes, Predicasts' PROMT

Company Catalogs, e.g., Aldrich, Eastman Kodak, City Chemical, K & K Laboratories, Strem Chemicals, Research Organics, Hardwick Chemicals, Thiokol.

2-2.6 Existing Chemical Use or Economic Profiles

SRI, Chemical Economics Handbook

Kirk-Othmer Encyclopedia of Chemical Technology

Faith, Keyes & Clark's Industrial Chemicals

SRI, Chemical Industry Profiles

Chemical Information Division's Index to CHIP, PUP and Materials Balance Reports

EPA's Reports Bibliographies

EXHIBIT 2-2. (Continued)

2-2.6 Existing Chemical Use or Economic Profiles (Continued)

NTIS on-line database

RADIAN - Plastic Industry Analysis (Draft Report - Contract Number 68-03-2776-03)

CICIS on-line database

CHEMRIC on-line database

Unpublished government reports from EPA offices such as OTE in Washington or Cincinnati

NIOSH Criteria Documents

ORDIS on-line database

Organic Chemicals, contains such information as names of producers, sales, production volume and average sales price on a large number of organic chemicals). A more detailed list of sources that can be used have been identified and grouped by type and category in the Appendices C-J. They are evaluated in Appendix A as to their probable utility.

Most of the information needed to obtain background information will be concentrated in the following sources which should be consulted first:

Condensed Chemical Dictionary
Merck Index or CRC Handbook of Chemistry and Physics
USITC - Synthetic Organic Chemicals
SRI - Chemical Economics Handbook
Faith, Keyes and Clark's Industrial Chemicals
Kirk-Othmer Encyclopedia of Chemical Technology.

One of the more difficult data items to obtain at this stage of the investigation may be the production quantity, particularly for chemicals that are manufactured by one or two companies. If published data are not available, production volumes sometimes may be estimated based on plant capacity if known or reported in published literature. Production or consumption volume can sometimes be deduced by an analysis of various indirect data sources as described in Section 2.6. It should also be noted that most sources which may seem to name the producers of a chemical (Exhibit 2-2) may in fact, identify distributors as well, e.g., OPD Buyers' Guide.

2.1.2 Classification of the Chemical

Since there are presently over 50,000 chemicals listed in the TSCA Inventory of Chemicals, the rapid and efficient development of use and economic data for a specific chemical can present a difficult task. However, there appears to be a definite relationship between the commercial classification of a chemical and the availability, quantity and reliability of information concerning its use. Moreover, one can utilize this relationship to facilitate the identification of pertinent information sources and consequently, shorten search time.

Therefore, in order to help the investigator, ROMAR has developed a systematic method of classifying chemicals according to their commercial status. The commercial status of a chemical is related to:

- the quantity of the chemical that is produced
- the price of the chemical
- the number of producers
- the type of product specifications.

By evaluating each of the above, as described below, the investigator can classify all chemicals in four categories: commodity chemicals, specialty chemicals, fine chemicals, and small volume chemicals. A fifth category, unclassified, has been created for chemicals which do not have enough information to allow them to be placed into one of the other four categories.

2.1.2.1 Definition of Categories and Classifying Chemicals

These five categories have been defined as follows:

- Commodity Chemicals

  These are chemicals characterized by large volume production (over 100 million lbs./year), low price, sold on the basis of composition specification and produced by more than three companies.

  They may be sold on a contract basis in bulk quantities e.g., tank cars, pipeline, or barges, and have a limited number of functions but many applications in a variety of industries. They are often manufactured by a great number of companies, at prices that range between 20¢ to 75¢ per pound. Another characteristic of commodity chemicals is that the product sold by one producer can be used interchangeably with that of other producers since the specifications are usually the same.

  Chemicals in this class are usually widely used and much information on their production, major uses, producers and prices are readily available. However, chemicals in this class may require considerable effort to uncover all of their end-use applications. Their exposure potential can be high because of their widespread applications. Examples of commodity chemicals are benzene, vinyl chloride, ethylene and sulfuric acid.

- Specialty Chemicals

  These are chemicals manufactured to a performance specification* and therefore not usually interchangeable with other chemicals made for the same use by different producers. Specialty chemicals are not used as chemical intermediates. Specialty chemicals are relatively high in price, averaging 40¢ per pound (range: 40¢ to $2.00 per pound), and are produced in relatively small volumes. They are generally diffentiated on the basis of performance often achieved by variation in molecular composition, and are frequently used in formulated products. Chemicals in this class usually have only one function and find limited application in a small number of indusries. Because of their specialty nature, there may be few manufacturers of a given chemical. (Examples are noted in Exhibit 2-3.)

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* A chemical's performance is dependent on its molecular structure. Hence a chemical that is sold on performance means that it is designed to satisfy a customer's specific problem.

- Fine Chemicals

  Fine chemicals are manufactured to composition specifications, are produced in low-volume and sold at high prices (above $1.00 per pound). Because of the limited market size there are generally few producers. They also tend to have specific functions and applications. Examples are flavor and perfume chemicals, low volume cyclic intermediates and medicinals.

- Small Volume Chemicals

  Small volume chemicals are produced in very low volume, are very high in price and have limited uses in a small number of industries. The price of a compound is well over $2.00 per pound (range of $1.50 and up). Examples are noble metal chemicals such as platinic acid (H_2PtCl_6), catalytic agents, and rare earth chemicals.

- Unclassified

  This category is for chemicals for which little or no information can be found from the sources suggested in Exhibit 2-2. They generally do not fit in other categories and require much more effort to develop use information. They may even require deductive methods to determine possible uses (see Section 2.6). These ae usually new chemicals being registered for specific uses under PreManufacturing Notice requirements.

Exhibit 2-3 illustrates how organic chemicals would fit within the classification scheme.

2.1.2.2 Method of Classification

The classification system has been devised to provide a framework which will help orient the investigator and give some indication of the quantity and accessibility of data concerning a given chemical. Use of the

EXHIBIT 2-3.

EXAMPLES OF ORGANIC CHEMICALS AND THEIR CLASSIFICATION

(Source: USITC Synthetic Organic Chemicals, 1978)

Name	(1978) Production Volume (Millions of Pounds)	Price (1978) $/lb.
Commodity Chemicals		
Benzene	10,504	.101
Cyclohexane	2,332	.112
Naphthalene	157	.156
Polyethylene Glycol	90	.370
Alkylbenzenes	526	.280
Aniline	606	.220
Oil soluble petroleum sulfonate, calcium salt	275	.520
Specialty Chemicals		
Cobalt naphthenate	3.7	$2.28
Fatty acid esters	30 0	.52
Polyacrylamide	53.0	1.09
Sodium polyacrylate	10.0	1,01
Diethanolamine condensates	24.7	.60
Polyethylene glycol distearate	1.7	.42
Fine Chemicals		
Ethyl propionate	.207	$1.35
N,N-Diethylaniline	2.4	1.00
Tert-butylperoxy benzoate	3.5	1.96
Small Volume Chemicals		
Cedrol	.049	$5.84
Phenethyl isobutyrate	.007	4.67
2-Phenethyl phenylacetate	.023	4.94

classification system will also permit a rapid assessment of the difficulty which will be encountered in collecting both background data, and more detailed use and market information.

Each chemical can be assigned to a classification category on the basis of its production or sales volume*, price, number of producers and product specifications. All this information, except for the product specifications, will have been gathered from the sources listed in Exhibit 2-2.

With regard to product specifications, there are two types to which a chemical is produced, viz., composition or performance specifications. When a chemical is produced to a composition specification, the amount of impurities in the chemical must be within designated limits. Drugs, for example, are produced to composition specifications. When a chemical is produced to performance specifications, purity is not the prime concern but rather how the chemical performs in its end use application. For example, a defoamer must be able to reduce foaming and is formulated for optimal results in each specific application for which it is used.

Exhibit 2-4 summarizes details of the conomic factors that determine each classification category. The ranges of quantitative data developed for this chart were derived from the USITC (Synthetic Organic Chemicals, 1978). Most chemicals classified as commodity, specialty, fine or small-volume will fall within the ranges noted in Exhibit 2-4. However, these ranges are not to be considered prescriptive. All of the variables (price, production volume, number of producers and sales specifications) should be considered as a whole in classifying a chemical including the general characteristics of each class as described previously.

Each chemical under investigation is compared to this table and thus classified into one of the five categories.

2.2 DETERMINE USE OF THE CHEMICAL: PHASE II

The purpose of the second phase is to identify the major uses and some of the minor uses of the chemical and to quantify the volume produced and/or the amount consumed in the major use areas. In this stage of information gathering, tracking of the chemical and its derivatives through their various applications and consuming industries is initiated. By tracking a chemical through the different tiers of consumption, from primary producer and distributors through processors to end use industries, a pattern of the chemical's consumption and use is developed. The general flow method to be followed in determining uses of chemicals is described in the following paragraphs.

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* Note that if the production volume of a chemical is not known, the sales volume can be used instead to classify the chemical.

EXHIBIT 2-4.

CLASSIFICATION SCHEME FOR CHEMICAL USE INFORMATION*

CLASS	PRICE	ANNUAL PRODUCTION VOLUME	NUMBER OF PRODUCERS	PRODUCT SPECIFICATIONS
A - COMMODITY CHEMICAL	Average of 40¢ per lb. with a range of 10¢ to 75¢	From 100 million lbs. up	Usually well over 3	Composition
B - SPECIALTY CHEMICAL	Average of 65¢ per lb. with a range of 40¢ to $2.00	Between 2 and 200 million lbs.	Few. Usually 1 to 3	Performance
C - FINE CHEMICAL	Average of $1.25 with a range of 60¢ to $4.00	Between 51,000 pounds and 99 million pounds	Few. Usually 1 to 3	Composition
D - SMALL VOLUME CHEMICAL	Usually well over $2.00 per lb. Range $1.50 - up	100 lbs. to 50,000 lbs.	Very few. Usually only 1 or 2	Composition
E - UNCLASSIFIED	Undetermined	Undetermined	Undetermined	Undetermined

---

* The quantitative values used in this scheme cover a wide range of dollars or pounds. Nonetheless it is important to note that these values are based on 1978 dollars and production volumes. The prices should be reviewed at least once a year and adjusted according to standard economic indicators.

2.2.1 Consult General Sources

General sources are the best starting point for determining basic uses and can provide the background information required for Phase I. They will prove valuable in providing data on the major uses of chemicals, particularly commodity and specialty chemicals.

General sources naturally have their limitations:

1) They may not distinguish between the function and application of a chemical or may do so inconsistently.

2) They seldom present minor uses and small volumes uses of commodity chemicals.

3) Use information given for chemical derivatives may not be complete.

Despite these limitations general sources form the basis from which our information flow evolves.

2.2.2 Determine Functions of the Chemical

The function of a chemical has been defined, for the purpose of this handbook as the action it performs, or for which it is specially fitted. Examples of functions of chemicals are antioxidants, plasticizers or antifreeze.

In general, a chemical can function (1) as an intermediate in the production of other chemicals, (2) as an adjunct in the production or processing of other chemicals, and/or (3) function directly in an end-use application, as, for example, in a formulated product. It is often easier to collect information, particularly for a large volume or commodity chemical which may have a myriad of functions and applications, by considering its intermediate and adjunct functions separately from its end-use functions.

2.2.2.1 Consult Published Corporate and Trade Information Sources

A wealth of information can be gleaned from the published information distributed by the manufacturers, processors and distributors of a commodity chemical concerning its physical/chemical properties, uses, production processes, prices and other economic information. These include sources such as:

- Publicity releases
- Product brochures
- Material Safety data sheets

- Trade association publications
- Bulletins announcing new uses
- Advertisements
- Annual reports
- House organs

The complete information which some companies publish on a chemical is equivalent to a textbook with technical reference and original data. DuPont, for example, publishes a well-referenced textbook on dimethyl formamide with physical and chemical property data, complete chemical processes, and actual and possible uses. These publications are often issued in the early stages of the commercialization of a chemical.

Such sources can be requested directly from the manufacturers as soon as they have been identified. Company marketing or sales departments can be contacted for additional information on uses and new or potential markets.

A review of industry-specific and trade sources may yield information on specific functions, consumption volumes and other economic information not already uncovered, e.g., a new processor or manufacturer. These types of sources include industry or technical handbooks (e.g., Vinyl Chloride and PVC Manufacture - Sittig; Surfactants and Sequestrants - Gutcho), trade associations (e.g., American Petroleum Institute, Society of the Plastics Industry) and special trade publications, trade magazine editors or feature writers.

Industry or trade associations can be identified through the subject index to Gale's _Encyclopedia of Associations_. Trade and industry journals and magazines will be found according to subject in Ulhrich's _Current Periodicals_. Technical handbooks and monographs devoted to commercial aspects of individual chemicals or industrial applications can be found by searching Bowker's _Books in Print_, which has a good subject index, and is also available as an _on-line file._ Eexhibit 2-5 lists typical examples.

2.2.2.2 Determine Chemical Derivatives

Most large-volume chemicals function as intermediates or as adjuncts in the production of other chemicals. In order to determine derivatives or intermediate uses of any chemical one must first identify processes which use the chemical in question as part of the input mix. Exhibit 2-6 lists sources for process information on chemical derivatives.

Though process information is usually held confidential by most chemical companies, they are usually willing to share information about the _kinds_ of products that the chemical they are making will produce, or in which it can be used. Therefore, manufacturers, and, to a lesser extent, distributors can be contacted to help identify the uses of their product, especially in the synthesis of the smaller volume end-product chemicals.

EXHIBIT 2-5.

EXAMPLES OF TRADE AND INDUSTRY-SPECIFIC INFORMATION SOURCES

Trade Associations

American Textile Manufacturers Institute
The Fertilizer Institute
Paint Research
Technical Association of the Pulp and Paper Industry

Trade or Industry-Specific Journals

Adhesives Age
Elastomerics
Farm Chemicals
Modern Plastics

EXHIBIT 2-6.

SAMPLE SOURCES FOR INFORMATION ON CHEMICAL PROCESSES

Handbooks, Textbooks and Encyclopedias

- Faith, Keyes and Clark's Industrial Chemicals
- Kirk-Othmer Encyclopedia of Chemical Technology
- Chemical and Process Technology Encyclopedia
- Chemical Technology, an Encyclopedia Treatment
- Encyclopedia of Chemical Processing and Design
- Organic Chemical Process Encyclopedia-Sittig
- Groggins - Unit Processes in Organic Synthesis
- SRI - Chemical Economics Handbook
- SRI - Chemical Origins and Markets

On-line Data Bases

- Chemical Industry Notes
- Predicast's PROMT
- Compendex
- CA Condensates

Special Reports

- Plant by Product Process (EPA)
- Industrial Process Profiles for Environmental Use (EPA)

Other Sources

- Chemical Abstracts
- Patents

2.2.2.3 Determine Uses of Chemical Derivatives

To complete the economic picture the chemicals derived from the subject chemical can be treated as new chemicals, and background information should then be collected on the manufacturers, production and sales volumes, etc. In other words, for each chemical derivative a Phase I background review may be conducted.

To complete the cycle, all chemical derivatives should be traced to an end-use application. However, time constraints and the degree of thoroughness desired will influence the detail of the use profiles prepared for each chemical derivative.

2.2.3 Determine Application of the Chemical

The application of a chemical has been defined, for the purpose of this handbook, as the industrial sector in which a chemical is consumed for the manufacture or production of finished products or other chemicals. Application leads to an industry-oriented, as opposed to process-oriented, look at the use of the chemical.

2.2.3.1 Identify Consuming Industries Sources

The industries that use the chemical in question should next be identified. The sources that were used to identify the functions of the chemical will also suggest relevant industries in which the chemicals are used.

2.2.3.2 Consult Published Corporate Information Sources

Information distributed by the manufacturers, processors and distributors of specialty chemicals concerning uses (especially applications), prices and users of the chemical in such forms as purchasing catalogs, product brochures, advertisements, and publicity releases should be obtained if possible. Again, company marketing departments may be contacted for additional or more detailed information.

2.2.3.3 Consult Type-Specific Sources

Certain chemicals, in particular, specialty chemicals, have a limited number of functions but may have a variety of end use applications in a number of diversified industries. They are almost always components of formulated products. Dyes, for example, can be used in food, packaging, paints, textiles, cosmetic, plastics and the paper industries for a myriad of products which consumers come in contact with both physically and in their homes or their workplace.

Formulators or processors of such chemicals can often produce detailed information on applications, and can be identified in the following ways:

- Through many of the sources used in Phase I, or in Section 2.2.2.
- By knowing the industries that use the chemical based on the chemical's function, and verifying the information with manufacturers or trade associations.
- From manufacturers or processors directly.

Type-specific sources of use and/or manufacturer information can now be consulted based on the industry application areas identified. For example, a food chemical can be looked up in the Food Chemicals Codex. Sample sources for organic chemicals are listed in Exhibit 2-7.

In addition, trade associations would be identified (using Gale's Encyclopedia of Associations) as well as the editors of trade publications (e.g., food manufacture, food product development) and other experts in the specific industry.

All sources should be consulted for:

- function/applications of the chemical
- possible functions/applications
- manufacturers/processors/distributors
- possible manufacturers/processors/distributors
- amount consumed by each use area.

2.2.4 Trace Uses to End-Use Applications

In this step, the consumption use tree (for examples, see Exhibits 2-8 and 2-9) is completed by reiterating the methods described in the earlier steps until the chemical is traced to each of its end use applications.

As mentioned in the previous discussion concerning chemical derivatives (see Section 2.1.2.2), if possible the researcher should trace any uses of a commodity chemical to its end-use when it reaches the consumer, usually as a component of a formulated product. Otherwise, a complete picture of the chemical cannot be developed. Again, there may be time constraints for obtaining the data which do not allow a complete use determination.

2.2.5 Identify Chemical Alternates

In order to fully evaluate a particular chemical, it is often necessary to compare that chemical with alternative or substitute chemicals.

EXHIBIT 2-7.

SAMPLE SOURCES OF INDUSTRY-SPECIFIC INFORMATION

FLAVOR AND PERFUME CHEMICALS

- Fenaroli's Handbook of Flavor Ingredients

CHEMICAL INTERMEDIATES

- Chemical Abstracts
- Aldrich Catalog of Fine Chemicals
- Organic Processes - Groggins

FOOD CHEMICALS

- Fenaroli's Handbook of Flavor Ingredients
- Food Chemicals Codex

MEDICINAL CHEMICALS

- National Formulary
- U. S. Dispensatory
- U. S. Pharmacopeia

PLASTICS AND RESINS

- Modern Plastics Encyclopedia
- Whittington's Dictionary of Plastics

ELASTOMERS

- Rubber Red Book

PLASTICIZERS

- Encyclopedia of Basic Materials for Plastics

SURFACE ACTIVE AGENTS

- McCutcheon's Detergents and Emulsifiers Annual
- Soap and Chemical Specialties Bluebook for Reference and Buyers' Guide

EXHIBIT 2-7. (Contd.)

DYES AND PIGMENTS

- Colour Index
- American Association of Textile Chemists and Colorists Buyers' Guide

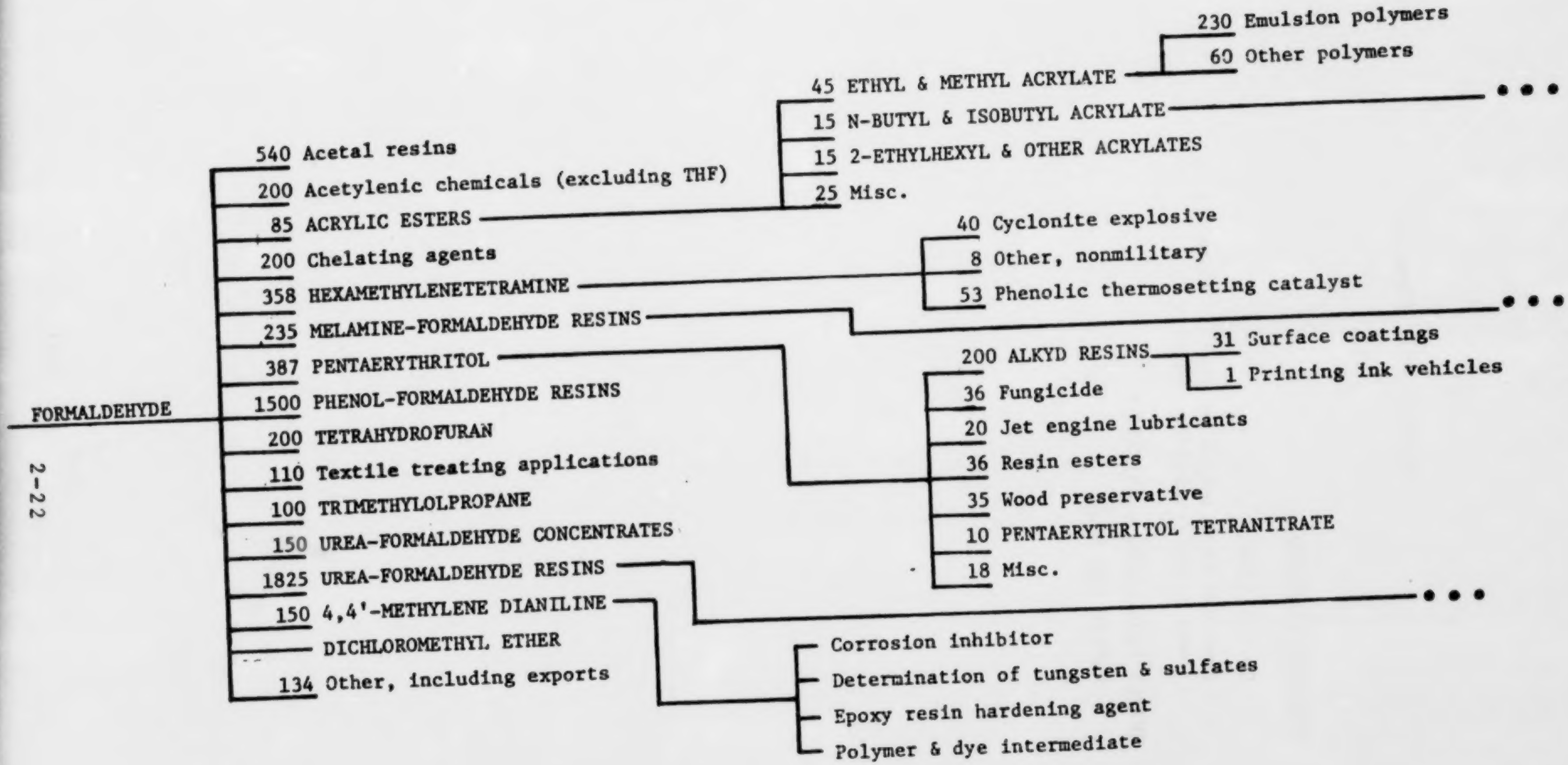
RUBBER PROCESSING CHEMICALS

- Rubber Red Book

EXHIBIT 2-8.

PART OF A USE TREE OF FORMALDEHYDE

(units in MM lb/yr)

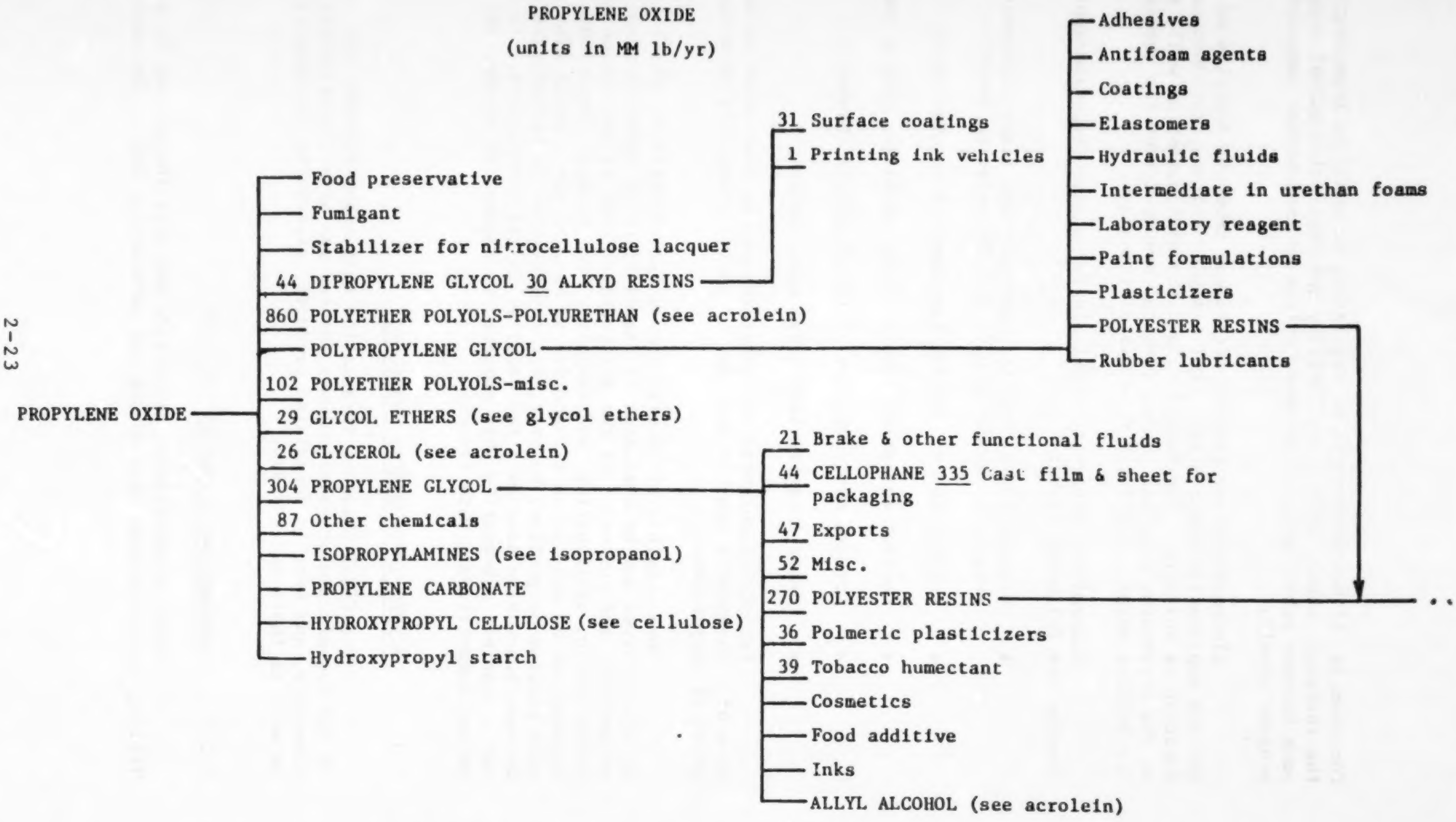

FORMALDEHYDE
540 Acetal resins
200 Acetylenic chemicals (excluding THF)
85 ACRYLIC ESTERS
45 ETHYL & METHYL ACRYLATE
230 Emulsion polymers
60 Other polymers
15 N-BUTYL & ISOBUTYL ACRYLATE
15 2-ETHYLHEXYL & OTHER ACRYLATES
25 Misc.
200 Chelating agents
358 HEXAMETHYLENETETRAMINE
40 Cyclonite explosive
8 Other, nonmilitary
53 Phenolic thermosetting catalyst
235 MELAMINE-FORMALDEHYDE RESINS
387 PENTAERYTHRITOL
200 ALKYD RESINS
31 Surface coatings
1 Printing ink vehicles
36 Fungicide
20 Jet engine lubricants
36 Resin esters
35 Wood preservative
10 PENTAERYTHRITOL TETRANITRATE
18 Misc.
1500 PHENOL-FORMALDEHYDE RESINS
200 TETRAHYDROFURAN
110 Textile treating applications
100 TRIMETHYLOLPROPANE
150 UREA-FORMALDEHYDE CONCENTRATES
1825 UREA-FORMALDEHYDE RESINS
150 4,4'-METHYLENE DIANILINE
Corrosion inhibitor
Determination of tungsten & sulfates
Epoxy resin hardening agent
Polymer & dye intermediate
DICHLOROMETHYL ETHER
134 Other, including exports
• • •

Source: Plastics Industry Analysis Draft Report to EPA, Radian Corp., 1979.

EXHIBIT 2-9.

EXAMPLE OF A USE TREE ILLUSTRATING USES OF PROPYLENE OXIDE

(CONSUMPTION BY USE AREA IS ALSO INCLUDED WHERE AVAILABLE)


PROPYLENE OXIDE
(units in MM lb/yr)
PROPYLENE OXIDE
Food preservative
Fumigant
Stabilizer for nitrocellulose lacquer
44 DIPROPYLENE GLYCOL
30 ALKYD RESINS
31 Surface coatings
1 Printing ink vehicles
860 POLYETHER POLYOLS-POLYURETHAN (see acrolein)
POLYPROPYLENE GLYCOL
Adhesives
Antifoam agents
Coatings
Elastomers
Hydraulic fluids
Intermediate in urethan foams
Laboratory reagent
Paint formulations
Plasticizers
POLYESTER RESINS
Rubber lubricants
102 POLYETHER POLYOLS-misc.
29 GLYCOL ETHERS (see glycol ethers)
26 GLYCEROL (see acrolein)
304 PROPYLENE GLYCOL
21 Brake & other functional fluids
44 CELLOPHANE
335 Cast film & sheet for packaging
47 Exports
52 Misc.
270 POLYESTER RESINS
36 Polmeric plasticizers
39 Tobacco humectant
Cosmetics
Food additive
Inks
ALLYL ALCOHOL (see acrolein)
87 Other chemicals
ISOPROPYLAMINES (see isopropanol)
PROPYLENE CARBONATE
HYDROXYPROPYL CELLULOSE (see cellulose)
Hydroxypropyl starch

Source: Plastics Industry Analysis Draft Report to EPA, Radian Corp., 1979.

For example, if benzene were to be regulated, it would be important to know the toxicity, market price, availability and physical/chemical properties of such benzene substitutes as toluene, xylene or cyclohexane compared with benzene itself.

Alternatives are usually determined from the function of the chemical and its application under study. For example, toluene, cyclohexane, and xylene function as solvents. The function, and the application as well, are dependent on the structure, physical and/or chemical properties of the chemical such as its boiling point, reactivity or chemical groupings.

Determining alternate chemicals for a given function/application can involve the following steps:

- Consult encyclopedias, handbooks and trade literature to ascertain chemicals used for the selected function
- Consult buyers' guides for chemical manufacturers
- Contact companies likely to buy chemicals with a function
- Contact manufacturers of the alternate chemicals
- Contact appropriate trade associations.

Projecting potential alternatives can be done based on established uses of a chemical's generic analogs, or on the chemical's structure and physical properties.

Once possible alternatives have been identified, their likelihood as alternatives can be evaluated by examining their physical/chemical properties, and economics of the alternatives such as production methods, market price, availability, and toxicity. For example, functionally, ethylbenzene can be used as an alternative to benzene since it is also a solvent with similar properties; however, its market price is prohibitively high because benzene is used as a raw material in its manufacture. It is, therefore, not a feasible alternative when compared to toluene or xylene, which are both priced competitively with benzene.

2.3 MARKET INFORMATION: PHASE III

The final phase of information collection involves the determination of the consumption or sales volumes for end-use areas, particularly for commodity chemicals, and uses in formulated products, especially for specialty chemicals, as well as their derivatives.

2.3.1 Consumption Volume by Use Area

Trade associations, processors and distributors may be helpful in filling in information gaps on use and consumption data. The amount of the chemical derivative produced from a commodity chemical can also be estimated. With information on (1) the amount of the commodity chemical used in the production of the chemical derivative and (2) the stoichiometry of the chemical reaction, the amount of the chemical derivative can be calculated.

Other reference sources cited earlier, such as industry and company specific sources, might also include consumption volumes with use information. In addition, secondary sources, such as on-line data bases, might also include consumption volumes with use information.

Sample flow diagrams that would be used to represent the information collected are presented in Exhibits 2-8 and 2-9.

When data on the consumption of a chemical by use area are not available in published sources or industry contracts, they may be derived indirectly, using information such as percentages or parts by weight used in formulated products. These figures are frequently found in handbooks and formularies. The amount of a chemical consumed for intermediates can usually be calculated from reaction stoichiometry. Reference works on chemical processing and formulating often contain information on the amounts of solvents used. Total quantities of chemical consumed may be calculated based on stoichiometry and formulation data.

2.3.2 Price

Preliminary price data has already been collected during the background data gathering phase, used to classify the chemical for the purpose of directing the cause of further data gathering. At this stage in the investigation, examining historic price trends may help indicate the increasing (or decreasing) importance of the chemical, in terms of potential for use and then exposure. This can be done by searching past issues of the USITC Synthetic Organic Chemicals, U.S. Production and Sales, and consulting relevant sections of the SRI Chemical Economics Handbook, which frequently summarizes market history.

2.4 CHEMICALS ASSOCIATED WITH A SPECIFIC USE

The first step in identifying chemicals used in a particular industrial sector, or having a specific function, is to consult one of the many information sources which are organized in the "use to chemical" format. Such sources are difficult to classify by type, as they run the gamut from encyclopedias, handbooks and directories to specialized reviews, textbooks. and supplier directories. (The latter are valuable because they often list function categories associated with companies that manufacture or supply chemicals in these categories.) However, some very general encyclopedias and handbooks also list chemical uses and the associated functions (e.g., Kirk-Othmer Encyclopedia of Chemical Technology, Materials Handbook). Any information which can be obtained from these sources regarding industrial uses which require particular functional capabilities will serve to indicate which use-specific sources should be consulted to identify chemicals having selected uses.

This task entails "working backwards" through information sources to arrive at specific chemicals and the following steps should be taken:

1) Consult appropriate buyers' guides and directories for the specific industry and, where possible, for the specific use, to identify manufacturers and processors. Examples of buyers' guides include:

   Adhesives Red Book
   Paint Red Book
   Rubber Red Book
   Lockwood's Directory to the Paper Industry
   Oils, Detergents and Maintenance Specialties
   Glass Industry Directory
   Chemical Week Buyers' Guide

2) Consult the Census of Manufacturers Industry Series Reports by appropriate industry code to identify manufacturers.

3) Contact manufacturers and processors in specific industrial use sectors to determine the chemicals bought and sold for selected uses.

4) Concurrently, conduct a search in Chemical Abstracts, Predicasts (which covers the trade literature), and the patent literature, by use, and review the retrieved abstracts or articles to identify specific chemicals. Advertisements in trade journals should also be scanned for use/chemical information, and industry as well as company brochures, and patents for chemicals having those uses which are sought.

2.5 VERIFICATION OF USE INFORMATION

Verification of use and economic information requires that the data from a number of sources by compared.

This can be accomplished by several means:

- Comparing several sources where there is a legal requirement to report (i.e., USITC, Bureau of Census).

- Make calculations based on a variety of information such as

  Stoichiometry of chemical reaction
  Amounts of chemical (or chemical by function) used in formulating or processing products for which there may be industry data.

- Relate reported production data to installed capacity.

Often a source will not present original data, but will reference a sole source, such as a government report. In such instances, the government agency should be contacted to ascertain the reliability of the data in terms of coverage (of all companies), legal requirement for reporting, the form in which the data are collected as related to the published information.

Trade associations are often useful sources for verifying overall data. Some collect and disseminate rather detailed data that can be used to derive product specific information.

Industry specific sources also can be contacted to verify the data. However, unless there is a specific regulatory requirement, they do not have to provide any information and they face no liability if the data provided is false, incorrect or misleading.

When making industrial contacts, it is most efficient to advise them of the information that has been collected, before asking them to verify, comment on, or correct the data. It would help to highlight those areas where information verification is most crucially needed (potential high exposure situations). If industry is asked to "tell all" concerning the use of a chemical they may consider the request burdensome and may be more likely to consider the requested information as proprietary. However, if they are asked to "review" information already prepared by EPA and to "focus" only on certain aspects of the chemical's use, they are less likely to protest the request.

When conflicting information is retrieved from different sources, it is important to consider the date and authority of the source and other known facts about the subject, and to apply a certain amount of deductive reasoning and knowledge of both the chemical industry and the authority of the information sources. For example, if the price of hydroquinone is given at $1.39/lb. in USITC and $6.50/500 grams in Aldrich Chemical Catalog, one can easily deduce the price to use in the classification of the chemical. Knowing that the total annual sale volume of the chemical is over 11 million pounds, the higher price ($6.50/500 grams) would be for a laboratory chemical, and the probable commercial price for hydroquinone would be $1.39/lb. One also should know that Aldrich usually supplies laboratory quantities of a chemical, often at higher purity than the industrial grade.

2.6 INDIRECT PROCEDURES

There may be chemicals for which information is sought, but has not been found either at all, or to the extent required, using the procedures outlined in this handbook. The sources of last resort are Chemical Abstracts and the Patent Gazette. When no data on physical or chemical properties have been uncovered in the information sources listed in Exhibit 2-2, it may become necessary to do a retrospective manual search of Chemical Abstracts to retrieve the original papers which describe the isolation or synthesis of the chemical in question. These papers will usually give many of the chemical and physical properties since these usually form the basis for establishing the identity of a chemical. In some cases it may prove necessary to search back as much as 100 years.

Similarly, if no uses for a chemical are uncovered from the economic and trade literature, it may become necessary to do a retrospective search through the IFI/Plenum Claims data base, and manually search through the Patent Gazette. It should be noted that the Patent Gazette gives the claims for the compound, rather than the actual specifications for an application, and in some cases the original patent must be consulted to determine the formulations and quantities.

A deductive approach can be taken to determine consumption volume. This can be best illustrated by use of an example, such as a lubricant additive. Industry-specific technical sources on lubricants are consulted, such as:

- Oil and Gas Journal
- American Petroleum Institute
- Census of Manufacturers.

If formulations are given in which a known chemical with the desired function is listed as a percent figure, then from the sources that list total lubricant oil production, an approximate quantity for all chemicals that possess this function and are used in lubricant oil manufacture can be estimated. Specific alternate chemicals for this function can be identified by searching the buyers' guides, industry-specific sources, encyclopedias and technical monographs. Price ranges for these alternates can usually be found in the USITC Synthetic Organic Chemicals or current issues of the Chemical Marketing Reporter. If all prices are approximately within the same range, then the estimated total volume can be divided by the total number of alternate chemicals identified to obtain an estimate of the consumption volume for the specific chemical under investigation. This method of estimation is open to potential sources of error, of which a major factor would be failure to identify the correct number of alternate chemicals sharing the market for that particular function, and their relative price-performance character that might give a major share of the market to one of the alternates.

SECTION III. SOURCES OF CHEMICAL USE AND RELATED ECONOMIC INFORMATION

Chemical use and related economic information can be derived from a variety of resource materials ranging from those which contain general information, such as handbooks and encyclopedias, to others with highly specific information, such as trade publications and manufacturers' product bulletins.

3.1 SELECTION OF THE INFORMATION SOURCES

For the purposes of this handbook, approximately one hundred such information sources were selected and evaluated for their ability to yield chemical use and economic information. These have been evaluated, and the results of this evaluation are presented in various Appendices.

The information sources that have been evaluated comprise the major general sources of chemical use and related economic information and a wide range of industry specific sources.

The general sources may be considered a fairly comprehensive list. However, it was not the intention, nor was it possible within the scope of this work, to provide an equally comprehensive list of industry specific sources. Rather, the industry specific source list was compiled to indicate the type of sources that can be found for each important industry or industry subgroup.

3.2 EVALUATION OF THE INFORMATION SOURCES

Published sources were evaluated for the kind of chemical use and related economic information they contain. The specific categories that are useful in providing data needed to evaluate chemical uses and provide information on quantities, price are:

- chemical uses by function
- chemical uses by application
- production or sales (amount)
- consumption (amount) by use
- price
- producers
- physical/chemical properties
- other (includes synonyms, trade names, formulations, import/export data)

The evaluation of the categories of information that a source contains, enables the investigator to select those that will provide direct data on a chemical and those that will be useful in providing data from which desired use and economic information can be derived.

For example, U.S. International Trade Commission reports provide direct data on production (sales and price) for those chemicals listed.

A source such as the Handbook of Adhesives would provide information on adhesive formulations which when combined with overall data on adhesive production that might be found in the appropriate Census of Manufacturers report could provide an estimate of the amount of a chemical.

In addition to the data categories, the sources were evaluated for their format, means of access, age and scheduled update of source and for any limitations and difficulties that might be encountered in their use.

Format of Information relates to the way in which the data are presented; that is, can the source be searched from individual chemical or class of chemical to use or economic data, or from a specific use or application to the chemical or chemical class, or from some other parameter as trade name to use or to manufacturer.

Organization of Information is concerned with the means of access to the source. In other words, does the source contain an index or other alphabetical arrangement to link chemicals to use or vice versa, or is there only random access to information as in advertisements or the body of the text?

Age and Scheduled Updates refers to the date of publication and whether there is a regular schedule of updating, revision, etc.

Limitations and Difficulties that might be encountered in the use of the source are discussed. Among these are access problems, and the determination of relevancy of the search product to the subject matter, of particular importance in evaluating on-line databases.

The final evaluation of the source is a brief summary of its overall value for retrieving chemical use and related economic information.

3.3 ARRANGEMENT OF INFORMATION SOURCES

The sources of chemical economic information are arranged in several appendices as follows:

- Appendix A - evaluation sheets for each selected source arranged alphabetically by citation.
- Appendix B - information sources indexed by physical type (e.g., handbook, dictionary).
- Appendix C - information sources indexed by chemical use (function).
- Appendix D - information sources indexed by chemical use (application).
- Appendix E - information sources indexed by consumption by use.
- Appendix F - information sources indexed by price.
- Appendix G - information sources indexed by producers.
- Appendix H - information sources indexed by production/sales volume.
- Appendix I - information sources indexed by physical/chemical properties.
- Appendix J - information sources indexed for other subjects, i.e., synonyms, trade names, formulations, import or export data.

3.4 USING THE INFORMATION SOURCES APPENDICES

These appendices, which list and index the sources evaluated for chemical use and economic information, are important tools that can be used:

(1) To implement the search methodology evolved in Section II, i.e., searching from general sources, such as dictionaries

and encyclopedias, to specific sources such as trade buyers' guides and publications or industry-specific technical books (see Appendix B).

(2) To find a specific type of information, e.g., the price of a chemical, according to the eight data categories examined in the evaluation of each information source (see Appendices C-J).

(3) To evaluate the usefulness of a specific information source in providing chemical use and economic information. For example, a look at the worksheet on the Kline Guide to the Chemical Industry shows that it is useful in finding the following types of information: chemical function and application, consumption by use, price, producers, production and sales volume. Its evaluation on the worksheet states that it is an excellent source for identifying the major use areas for a wide range of chemicals (see Appendix A).

Thus the information sources assembled in the following appendices will implement every information-gathering task required to assemble chemical use and related economic data.

APPENDIX A.

EVALUATION SHEETS FOR SPECIFIC INFORMATION SOURCES

1. **Citation:** ABI/Inform. 1971 to present.
(Data Courier, Inc., Louisville, KY).
Available from Lockheed.

2. **Type of Source:** On-line data base.

● General ○ Specific SIC: ______________________

3. **Frequency of Update or Age of Source:** Monthly.

4. **Type of Chemical Economic Information:**

● Chemical Use
  ● Function
  ● Application
○ Consumption by Use Area
○ Other
● Price
○ Producers/Processors/Distributors
● Production/Sales Quantity
○ Physical/Chemical Properties

5. **Format/Means of Access:**

Chemical names and synonyms, trade names, controlled descriptors (e.g., "chemicals", "chemical products") and natural language may be entered to obtain economic information.

6. **Limitations/Difficulties**

This database does not always differentiate beteen use and economic data.

7. **Evaluation**

ABI/Inform contains little technical information. It is primarily a business publication with economic information on the chemical industry in general and approximately 1,000 references to well-known chemicals or chemical products.

1. Citation: Adhesive Red Book. 1st Edition. 1968.
Palmerton Publishing Co., Inc. N.Y., N.Y.

2. Type of Source: Buyer's guide.

○ General ● Specific SIC: 2821 - Adhesives.

3. Frequency of Update or Age of Source: Published annually.

4. Type of Chemical Economic Information:

- ● Chemical Use
  - ● Function
  - ● Application
- ○ Consumption by Use Area
- ○ Other
- ○ Price
- ● Producers/Processors/Distributors
- ○ Production/Sales Quantity
- ○ Physical/Chemical Properties

5. Format/Means of Access:

This book is a typical buyer's guide listing manufacturers and their adhesive products by class (i.e., epoxy, latex, sealants); sources of chemicals, compounding materials, and chemicals by functions; adhesive trade names and manufacturer.

6. Limitations/Difficulties:

7. Evaluation:

It is useful as a source of information on chemical manufacturers, processors, and distributors and the chemical products used in formulating adhesives. The function of chemicals used in adhesive formulation is given.

1. **Citation:** Adhesives: Guidebook & Directory. 1972.
Noyes Data Corp. Park Ridge, N.J.

2. **Type of Source:** Directory

○ General ● Specific SIC: 2891 Adhesives & Sealants.

3. **Frequency of Update or Age of Source:** Latest edition; no revision as yet.

4. **Type of Chemical Economic Information:**

● Chemical Use
    ○ Function
    ● Application
○ Consumption by Use Area
○ Other
○ Price
● Producers/Processors/Distributors
○ Production/Sales Quantity
● Physical/Chemical Properties

5. **Format/Means of Access:**

This is an alphabetical listing of companies that manufacture adhesives with trade names, physical properties, and typical applications of their products.

6. **Limitations/Difficulties**

There is no access from chemical, class of chemical, or trade name to use/economic information. No generic chemical names are included.

7. **Evaluation**

This book supplies only names of manufacturers producing chemicals used in the adhesives industry. Chemicals are identified only by trade name. This source is of low priority.

1. **Citation:** APILIT. 1964 to present.
American Petroleum Institute Refining Literature.
(American Petroleum Institute, New York, N.Y.)
Available from SDC.

2. **Type of Source:** On-line database.

○ General ● Specific SIC: 2911.
Petroleum Refining.

3. **Frequency of Update or Age of Source:** Monthly.

4. **Type of Chemical Economic Information:**

- ○ Chemical Use
  - ○ Function
  - ○ Application
- ○ Consumption by Use Area
- ○ Other
- ● Price
- ● Producers/Processors/Distributors
- ● Production/Sales Quantity
- ○ Physical/Chemical Properties

5. **Format/Means of Access:**

APILIT can be searched by chemical name, synonyms, chemical class or use to economic data.

6. **Limitations/Difficulties:**

Abstracts are on-line only since January 1978. Prior to that date, search output is a citation and controlled assigned vocabulary. One may have to consult the original document to determine relevance.

7. **Evaluation:**

This database, which covers the worldwide refining literature, is a good source of economic information for petrochemicals. "Economics and statistics" is a category code in this database.

Documents covered include trade magazines, technical journals, meeting papers and government reports.

1. **Citation:** APIPAT. 1964 to present.
American Petroleum Institute Refining Patents.
(American Petroleum Institute. New York, N.Y.)
Available from SDC.

2. **Type of Source:** On-line database.

○ General ● Specific SIC: 2911
Patents related to petroleum refining.

3. **Frequency of Update or Age of Source:** Monthly.

4. **Type of Chemical Economic Information:**

● Chemical Use
  ● Function
  ● Application
○ Consumption by Use Area
○ Other
○ Price
○ Producers/Processors/Distributors
○ Production/Sales Quantity
○ Physical/Chemical Properties

5. **Format/Means of Access:**

APIPAT can be searched from chemical name, synonyms, trade names or chemical class to use and from use to chemical name or chemical class.

6. **Limitations/Difficulties:**

The APIPAT search product is the citation and controlled assigned vocabulary. It may be necessary to obtain the patent in order to determine relevance.

7. **Evaluation:**

This index, which covers patents issued to the petroleum refining and petrochemical industry in the United States and nine other countries, is a valuable source of use information for petrochemicals.

1. Citation: ASI, American Statistics Index. 1973 - present.
(Congressional Information Services, Inc.,
Washington, DC.)
Available from SDC and Lockheed.

2. Type of Source: On-line database.

● General ○ Specific SIC: ______________________

3. Frequency of Update or Age of Source: Monthly.

4. Type of Chemical Economic Information:

○ Chemical Use
  ○ Function
  ○ Application
○ Consumption by Use Area
○ Other
● Price
● Producers/Processors/Distributors
● Production/Sales Quantity
○ Physical/Chemical Properties

5. Format/Means of Access:

Only the most important, major chemicals are directly searchable in the index to obtain economic data; other individual chemicals may be retrieved by free-text searching if they appear in the abstracts.

The index contains the terms "chemicals" and "chemical industry" as well as broad categories of chemicals, e.g., organic chemicals (personal communication, J. Payne, Congressional Information Service).

6. Limitations/Difficulties:

ASI is primarily a non-technical database. It is an index of all federal statistical publications and as such includes a large number of non-chemical citations.

7. Evaluation:

While this database may contain a considerable amount of chemical economic data, it may be accessed only in very general terms, such as "chemicals", "chemical industry".

1. **Citation:** Batteries. 1974.
   Karl V. Kordesch, ed.
   Vol. 1-Manganese Dioxide.
   Marcel Dekker, Inc. New York.

2. **Type of Source:** Book.

   ○ General ● Specific SIC: 3691 - Storage Batteries

3. **Frequency of Update or Age of Source:** 1974-latest edition, other later volumes are secondary (rechargeable) batteries and solid-state batteries.

4. **Type of Chemical Economic Information:**

   - ● Chemical Use
     - ● Function
     - ○ Application
   - ○ Consumption by Use Area
   - ○ Other
   - ○ Price
   - ○ Producers/Processors/Distributors
   - ○ Production/Sales Quantity
   - ○ Physical/Chemical Properties

5. **Format/Means of Access:**

   This book, in narrative form, covers the construction and performance of manganese dioxide batteries. It also discusses materials used (specific chemicals). The index is a good list of specific chemicals.

6. **Limitations/Difficulties:**

   Because this book has a narrative format, it is necessary to read or scan whole portions of the text to obtain information.

7. **Evaluation:**

   This source provides function use information for specific chemicals used in storage batteries. It is well indexed for chemicals.

1. Citation: Batteries and Energy Systems. 1970.
C.L. Martell.
McGraw-Hill, N.Y.

2. Type of Source: Book.

○ General ● Specific SIC: 3691 Storage Batteries.

3. Frequency of Update or Age of Source: 1970 is the latest edition.

4. Type of Chemical Economic Information:

● Chemical Use
  ● Function
  ● Application
○ Consumption by Use Area
○ Other
○ Price
○ Producers/Processors/Distributors
○ Production/Sales Quantity
○ Physical/Chemical Properties

5. Format/Means of Access:

This book describes designs and properties of all types of standard batteries and mentions important applications. The index contains only chemical classes that are used as electrodes. Some functional classes (e.g., dipolarizers) can also be located in the index.

6. Limitations/Difficulties:

There is no access to individual chemicals; only chemical classes are indexed.

7. Evaluation:

This source may be used to identify the classes and specific functions of chemicals used in batteries.

1. **Citation:** "Biological Abstracts On-line". 1969 - present. (Biosciences Information Service, Philadelphia, PA.) Available from SDC as Biosis and from Lockheed as Biosis Previews.

2. **Type of Source:** On-line database.

   ● General ○ Specific SIC: ____________________

3. **Frequency of Update or Age of Source:** Monthly.

4. **Type of Chemical Economic Information:**

   ● Chemical Use
      ● Function
      ● Application
   ○ Consumption by Use Area
   ○ Other
   ○ Price
   ○ Producers/Processors/Distributors
   ○ Production/Sales Quantity
   ○ Physical/Chemical Properties

5. **Format/Means of Access:**

   There is a natural language indexing system for chemicals. Since the chemical name indexed is the name used by the author, all synonyms should be searched. The index can be searched by chemical names, trade name, chemical class, names of elements and their compounds to obtain use information.

6. **Limitations/Difficulties**

   Since there is no controlled chemical vocabulary, one must search all synonyms or chemical class.

   This source contains no chemical economic data. Chemical information involves studies of biological activity in man and animals, as well as the effects of chemicals on ecology and environmental health.

7. **Evaluation**

   Biological Abstracts contains many references to chemicals, but only in relation to biological topics. Although chemical use information can be obtained, this is not a prime source of chemical use/economic information.

1. Citation: Books In Print. 1979-80.
R. R. Bowker Company. New York.

2. Type of Source: Directory

● General ○ Specific SIC: ______________________

3. Frequency of Update or Age of Source: Annual

4. Type of Chemical Economic Information:

○ Chemical Use
  ○ Function
  ○ Application
○ Consumption by Use Area
○ Other

○ Price
○ Producers/Processors/Distributors
○ Production/Sales Quantity
○ Physical/Chemical Properties

5. Format/Means of Access:

This is an author-title series index to the Publisher's Trade List Annual (PTLA) which is a listing of all books that are published or distributed in the United States.

6. Limitations/Difficulties:

There is no subject index; however, a companion publication, Subject Guide to Books in Print, lists books under the Library of Congress subject headings.

7. Evaluation:

This useful reference tool lists all books on chemical subjects that are in print and available in the United States.

1. **Citation:** *Chem Sources, USA*. 1972.
13th Edition.
Directories Publishing Co., Flemington, N.J.

2. **Type of Source:** Buyer's guide.

● General ○ Specific SIC: ______________________

3. **Frequency of Update or Age of Source:** Annual.

4. **Type of Chemical Economic Information:**

- ● Chemical Use
  - ○ Function
  - ● Application
- ○ Consumption by Use Area
- ○ Other
- ○ Price
- ● Producers/Processors/Distributors
- ○ Production/Sales Quantity
- ○ Physical/Chemical Properties

5. **Format/Means of Access:**

The first part of this book lists generic chemicals alphabetically and gives the manufacturer.

The second section lists major classes of chemicals by function and application with the major manufacturers.

The last section lists the chemical manufacturers alphabetically and gives their addresses and telephone numbers.

6. **Limitations/Difficulties:**

Chem Sources primarily provides identification of chemical manufacturers along with a small amount of use information. No other economic data is presented.

7. **Evaluation:**

Chem Sources is useful for identifying manufacturers of specific chemicals or manufacturers that supply chemicals for specific functions or applications.

1. Citation: "Chemical Abstracts On-line". 1967 - present. (Chemical Abstracts Service. Columbus, Ohio.) Available as CAS 77 (SDC) and as CA Search (Lockheed).

2. Type of Source: On-line database.

● General ○ Specific SIC: ______________________________

3. Frequency of Update or Age of Source: Biweekly.

4. Type of Chemical Economic Information:

- ● Chemical Use
  - ● Function
  - ● Application
- ○ Consumption by Use Area
- ○ Other
- ○ Price
- ○ Producers/Processors/Distributors
- ○ Production/Sales Quantity
- ● Physical/Chemical Properties

5. Format/Means of Access:

Only 300 common chemicals are indexed to retrieve use data directly. This information is retrieved for other chemicals by random access only.

6. Limitations/Difficulties:

Since these databases are bibliographic, and abstracts are not available on-line, it is often necessary to consult the primary source to qualify use information.

Furthermore, the use information may not be related to the chemical searched but to something else in the article.

7. Evaluation:

These databases contain some use information for a limited number of chemicals but this is not the primary focus of the database.

It does include patents, which are a good source of use information.

1. Citation: "Chemical Dictionary Files On-line"
Chemline (National Library of Medicine)
Chemname (Chemsearch and Chemsis, Lockheed Dialog Retrieval Services)
Chemdex (SDC)

2. Type of Source: On-line databases.

● General ○ Specific SIC: ______________________

3. Frequency of Update or Age of Source: Quarterly

4. Type of Chemical Economic Information:

○ Chemical Use	○ Price
○ Function	○ Producers/Processors/Distributors
○ Application	○ Production/Sales Quantity
○ Consumption by Use Area	○ Physical/Chemical Properties

● Other: Chemical nomenclature
Synonyms

5. Format/Means of Access:

These are chemical name dictionaries which can be searched by entering a generic name, a chemical name, a trade name, the CAS Registry Number or the molecular formula of a compound.

6. Limitations/Difficulties:

Any of the three can be used as a preliminary searching tool. They contain no chemical economic information. However, the nomenclature information provided, particularly synonyms, is invaluable for searching other manual and on-line sources.

7. Evaluation:

These data bases are useful for obtaining the CAS Registry Number, synonyms, chemical name, or trade names for entry into other databases.

1. **Citation:** Chemical Economics Handbook. 1977.
Stanford Research Institute. 24 Volumes.
Menlo Park, California.

2. **Type of Source:** Handbook, available to subscribers only.

● General ○ Specific SIC: ____________________

3. **Frequency of Update or Age of Source:** Periodic supplements; new edition every 8 years.

4. **Type of Chemical Economic Information:**

● Chemical Use
  ● Function
  ● Application
● Consumption by Use Area
○ Other
● Price
● Producers/Processors/Distributors
● Production/Sales Quantity
○ Physical/Chemical Properties

5. **Format/Means of Access:**

The Chemical Economics Handbook consists of detailed reports on individual chemicals and chemical classes. This source provides a tremendous amount of chemical use/economic data, derived both from published sources (e.g., USITC's Synthetic Organic Chemicals) and from SRI estimates based on market conditions in the chemical industry. An especially valuable feature is the breakdown of consumption by use area presented in some of the profiles. There are alphabetical indexes of specific chemicals and chemical classes (acetyl plastics and resins, adhesives, etc.).

6. **Limitations/Difficulties:**

This source does not cover small volume, non-commodity chemicals. For the chemicals covered, it supplies a great deal of information. The source has no index of applications, making it difficult to search from use to chemical.

7. **Evaluation:**

The Chemical Economics Handbook is an excellent source of use/economic information for major commodity chemicals. It is complete, thorough, and convenient. This should be one of the first sources consulted when preparing chemical use profiles.

1. Citation: Chemical Industry Notes. 1974 - present.
   (American Chemical Society, Columbus, Ohio)
   Available from Lockheed as Chemical Industry Notes and SDC as CIN.

2. Type of Source: On-line database. Based on chemical business publications.

   ● General ○ Specific SIC: ____________________

3. Frequency of Update or Age of Source: Monthly for Lockheed; weekly for SDC.

4. Type of Chemical Economic Information:

   ● Chemical Use
      ● Function
      ● Application
   ○ Consumption by Use Area
   ○ Other
   ● Price
   ● Producers/Processors/Distributors
   ● Production/Sales Quantity
   ○ Physical/Chemical Properties

5. Format/Means of Access:

   This database can be searched from chemical name and synonyms to use or economic information. Also from use or economic descriptors to chemical through controlled vocabulary and natural language.

6. Limitations/Difficulties:

   Since there is no controlled chemical vocabulary, one must enter all synonyms of the chemical in order to assure maximum retrieval of relevant information. Use information is not always linked to chemical of interest. Some economic information is descriptive, not informative.

7. Evaluation:

   This database contains brief abstracts of articles from chemical business publications. The concepts of "sales and consumption", "prices," and "production data" are indexed and therefore, searchable in the database. This source is particularly valuable for current pricing information.

1. Citation: Chemical Materials Catalog. 1973.
24th Edition, Reinhold Publishing Co., Stamford, Conn.
(Has been combined with the Engineering Catalogue.)

2. Type of Source: Catalogue.

● General ○ Specific SIC: ______________________

3. Frequency of Update or Age of Source:

4. Type of Chemical Economic Information:

● Chemical Use
    ● Function
    ○ Application
○ Consumption by Use Area
○ Other
○ Price
● Producers/Processors/Distributors
○ Production/Sales Quantity
○ Physical/Chemical Properties

5. Format/Means of Access:

The first section lists in alphabetical order functional groups of uses, classes of chemicals and specific chemicals with the names of the companies that produce them.

The next section lists alphabetically the trade names of specific chemicals with the companies that produce them.

The last section is composed of advertisements by companies (alphabetically). Sometimes, physical properties and suggested applications are given.

6. Limitations/Difficulties

This source serves to identify chemical producers, but provides little other use/economic information.

7. Evaluation

The Chemical Materials Catalog is a good source for searching from trade name, specific chemical, class of chemical or chemical function to manufacturer.

1. Citation: Chemical Monograph Referral Center (CHEMRIC). 1975 - present. (Consumer Product Safety Commission, Bethesda, MD.)

2. Type of Source: On-line, in-house database.
Search requests can be made to the Consumer Product Safety Commission.
● General ○ Specific SIC: ____________________

3. Frequency of Update or Age of Source: Continuous update as monographs become available.

4. Type of Chemical Economic Information:

- ● Chemical Use
    - ● Function
    - ● Application
- ○ Consumption by Use Area
- ● Other: Toxicity data.
- ○ Price
- ● Producers/Processors/Distributors
- ● Production/Sales Quantity
- ● Physical/Chemical Properties

5. Format/Means of Access:

The database can be searched from chemical or class of chemicals to use or economic information and from use to chemical or class of chemicals.

CHEMRIC provides access to citations from technical reports, government documents and books to over 450 monograph records which are produced by U.S. and international government agencies, private corporations and industrial and trade organizations.

6. Limitations/Difficulties:

The search product is citations; therefore, the document would have to be acquired. In addition, the emphasis of these monographs is on toxicity.

7. Evaluation:

Although these monographs are selected for their toxicity data on chemicals, they do contain valuable chemical use information.

1. **Citation:** Chemical Origins & Markets. 1980.
5th Edition. Gloria M. Lawler, Ed.
Chemical Information Services.
Stanford Research Institute. Menlo Park, CA.

2. **Type of Source:** Marketing statistics book.

● General o Specific SIC: ______________________

3. **Frequency of Update or Age of Source:** 8 to 10 year intervals, with supplements every 3-4 years.

4. **Type of Chemical Economic Information:**

o Chemical Use
    o Function
    o Application
● Consumption by Use Area
o Other
● Price
o Producers/Processors/Distributors
● Production/Sales Quantity
o Physical/Chemical Properties

5. **Format/Means of Access:**

- Production and consumption flowcharts for 2,400 intermediate chemicals (inorganic and organic).
- Production volume (U.S.) of 280 commercial chemicals.
- Market (end use) consumption by major consumer groups of the top 166 major chemicals (organic or inorganic).
- Supplements update statistics on organic intermediates.

6. **Limitations/Difficulties:**

End-use statistics are given for a limited number of chemicals.

7. **Evaluation:**

This is a good source of production data for chemical intermediates and provides consumption patterns for a limited number of chemicals.

1. Citation: Chemical Profiles. Chemical Marketing Reporter.
Schnell Publishing Company. New York.

2. Type of Source: Periodical.

● General ○ Specific SIC: ______________________
Coverage of a limited number of major chemicals.

3. Frequency of Update or Age of Source: Profiles added weekly.

4. Type of Chemical Economic Information:

● Chemical Use
  ○ Function
  ○ Application
● Consumption by Use Area
● Other: Plant Capacity and Demand
● Price
● Producers/Processors/Distributors
● Production/Sales Quantity
○ Physical/Chemical Properties

5. Format/Means of Access:

● From individual chemical to use and economic information.

● Random access to specific chemicals.

The Chemical Profile is a regular feature of Chemical Marketing Reporter, a weekly newspaper. There is only one profile per issue, limiting coverage to no more than 52 chemicals yearly. As a result, only commodity chemicals are included. Profiles are updated and repeated approximately every one to three years.

Access to chemicals is totally random. There is no alphabetical arrangement nor index. The Profiles may be purchased in quarterly segments. An alphabetical list is available for each segment, but there is no master list.

6. Limitations/Difficulties

The information contained in the Chemical Profiles is rather general. Chemical uses are usually given as the industries in which the chemical is used, rather than the more specific function(s) and application(s). Producers are listed with their total production capacities and plant sites, but no actual production figures are presented. Demand (sales)

6. Limitations/Difficulties (Continued)

figures are listed, including a projection for future demand. Price data are provided as the high and low prices during a given time span, along with the current price. There is no indication of when the high and low prices were in effect, so no trends can be established. A very helpful feature is the breakdown of consumption by use area. Also useful are the portions on strength, weakness, and outlook for the chemical which summarize current market conditions.

7. Evaluation

The Chemical Marketing Reporter Profiles provide basic, rather general chemical economic information. Of particular interest is the breakdown of consumption by use area. Accessing the information on a given chemical is difficult. If an up-to-date profile can be easily obtained, it will provide useful economic background information for the chemical in question.

1. **Citation**: Chemical Specialties. 1946.
H. Bennett.
Chemical Publishing Co., N.Y.

2. **Type of Source**: Handbook.

○ General ● Specific SIC: ______________________
Production and sales of chemical specialities.

3. **Frequency of Update or Age of Source**: Update, latest edition, 1978.

4. **Type of Chemical Economic Information**:

● Chemical Use
  ○ Function
  ● Application
○ Consumption by Use Area
● Other: Formulations
○ Price
○ Producers/Processors/Distributors
○ Production/Sales Quantity
○ Physical/Chemical Properties

5. **Format/Means of Access**:

A chapter is included on formulations of a wide variety of consumer products such as Adhesives, Cosmetics, Emulsions, Farm and Garden Specialties, Food Products, Inks & Crayons, Leather & Fur Dressings, Oils & Essences, Building Materials, Metals & Treatment, Paper Treatment, Paints & Lacquers, Photography, Polishes, Plastics & Wax, Pyrotechnics, Soaps & Cleaners, Textiles, Miscellaneous. The formulae ingredients are given as generic names.

6. **Limitations/Difficulties**

Chemicals are not included in the index.

7. **Evaluation**

This book provides information on chemicals having a specific application. An accurate evaluation was not possible, because only the 1946 edition was available for review.

1. **Citation:** Chemical Synonyms & Trade Names. 1978.
William Gardner.
8th Ed., Technical Press, Oxford.

2. **Type of Source:** Dictionary.

● General ○ Specific SIC: ____________________

3. **Frequency of Update or Age of Source:** Irregular.

4. **Type of Chemical Economic Information:**

- ● Chemical Use
  - ○ Function
  - ● Application
- ○ Consumption by Use Area
- ● Other: Trade name identification.
- ○ Price
- ● Producers/Processors/Distributors
- ○ Production/Sales Quantity
- ○ Physical/Chemical Properties

5. **Format/Means of Access:**

This is an alphabetical list of trade names giving the generic name or (if proprietary) the raw materials and the major applications. Manufacturer names are sometimes provided.

6. **Limitations/Difficulties:**

The entries in this work are only trade names. There is no index or other route of access directly to generic chemical names.

7. **Evaluation:**

This source is useful for the identification of trade name products and their major uses. Generic chemical names cannot be searched.

1. Citation: Chemical Trade Names & Commercial Synonyms. 1955.
Haynes. 2nd Edition.
Van Nostrand Co., Princeton, N.J.

2. Type of Source: Directory.

● General ○ Specific SIC: ______________________________

3. Frequency of Update or Age of Source: Out of print.

4. Type of Chemical Economic Information:

● Chemical Use
  ● Function
  ○ Application
○ Consumption by Use Area
● Other: Trade names

○ Price
● Producers/Processors/Distributors
○ Production/Sales Quantity
○ Physical/Chemical Properties

5. Format/Means of Access:

This is an alphabetical listing of trade names, most with generic equivalent, major application and manufacturer.

6. Limitations/Difficulties:

This source has not been updated in 25 years.

7. Evaluation:

This is a good source for obtaining generic names for trade names; however, use/economic information obtained from it should be used with caution, due to the age of the material.

1. **Citation:** Chemical Week.
McGraw-Hill, Inc. New York, N.Y.

2. **Type of Source:** Weekly chemical business periodical.

● General ○ Specific SIC: ____________________

3. **Frequency of Update or Age of Source:** N/A

4. **Type of Chemical Economic Information:**

- Chemical Use
  - Function
  - Application
- Consumption by Use Area
- Price
- Producers/Processors/Distributors
- Production/Sales Quantity
- Physical/Chemical Properties
- Other: Market trends, regulations, stock prices, production capacity.

5. **Format/Means of Access:**

Access to the wide variety of material in Chemical Week is random. Information is contained in articles, news summaries, special reports and advertisements throughout each issue. Computerized data bases, such as Predicasts PROMT and Chemical Industry Notes index Chemical Week, and provide the most efficient means of locating relevant articles. Although these data bases are up-to-date and on-line searching is quick, the original article must be examined, adding time and effort. (Refer to the discussions of these and other on-line data bases.)

6. **Limitations/Difficulties**

Although Chemical Week can provide a great deal of valuable information, its lack of accessibility detracts from its usefulness as a direct source.

7. **Evaluation**

Chemical Week alone cannot be used efficiently as a source of chemical use/economic information. However, when searched via a computerized data base in conjunction with other chemical business publications, it can provide a great deal of current, relevant information on specific chemicals, applications and corporate financial data.

1. **Citation:** Chemical Week Buyers' Guide Issue.
McGraw-Hill. New York, N.Y.

2. **Type of Source:** Buyers' guide.

● General ○ Specific SIC: ____________________

3. **Frequency of Update or Age of Source:** Annual.

4. **Type of Chemical Economic Information:**

● Chemical Use
  ○ Function
  ○ Application
○ Consumption by Use Area
○ Other

○ Price
● Producers/Processors/Distributors
○ Production/Sales Quantity
● Physical/Chemical Properties

5. **Format/Means of Access:**

The main section of this buyers' guide lists chemicals in alphabetical order with names of suppliers. Information on uses and physical/chemical properties of a limited number of chemicals appears in the advertisement section, which is arranged by company. Access is random.

The buyers' guide also has an alphabetical section of chemical trade names, listing manufacturers and a very brief description of the product. Company addresses are provided, as well as an advertisers' index (by company, not product).

6. **Limitations/Difficulties:**

The Chemical Week Buyers' Guide provides easy access only to the identification of producers/distributors. Any other relevant information must be extracted by scanning advertisements.

7. **Evaluation:**

This book is useful only in providing names of companies that manufacture and process a chemical or chemicals with common fuctions. (See also OPD Buyers' Guide.)

1. Citation: Chemicals in Commerce Information System (CICIS). 1978-present. (Prepared for the Office of Toxic Substances, Environmental Protection Agency, Washington, D.C. by Informatics, Inc., Rockville, MD.)

2. Type of Source: On-line database for in-house use only.

● General ○ Specific SIC: ______________________

3. Frequency of Update or Age of Source: Unspecified.

4. Type of Chemical Economic Information:

○ Chemical Use
  ○ Function
  ○ Application
○ Consumption by Use Area
○ Other

○ Price
● Producers/Processors/Distributors
● Production/Sales Quantity
○ Physical/Chemical Properties

5. Format/Means of Access:

Access by chemical name yields a range of production volume.

6. Limitations/Difficulties

Largely proprietary information.

7. Evaluation

This database is a storage and retrieval system for the chemical information collected under the Toxic Substances Control Act (TSCA).

It can be used to obtain the production range of a chemical; however, most of the data is confidential.

1. **Citation:** CHEMSIS. 1972 - 1976.
(Chemical Abstracts Service. Columbus, OH.)
Available from Lockheed.

2. **Type of Source:** On-line database.

● General ○ Specific SIC: ____________________

3. **Frequency of Update or Age of Source:** Closed file.

4. **Type of Chemical Economic Information:**

- ○ Chemical Use
    - ○ Function
    - ○ Application
- ○ Consumption by Use Area
- ○ Price
- ○ Producers/Processors/Distributors
- ○ Production/Sales Quantity
- ○ Physical/Chemical Properties
- ● Other: Synonyms and nomenclature

5. **Format/Means of Access:**

CHEMSIS is a non-bibliographic dictionary file (see Chemical Dictionary Files). It is accessed by CAS Registry Number, molecular formula, systematic nomenclature, synonyms and other chemical substance data.

6. **Limitations/Difficulties:**

CHEMSIS contains substances indexed only once in Chemical Abstracts. The relative rareness of these substances can be an advantage of using this database, because they will not be included in other chemical dictionary files.

7. **Evaluation:**

This chemical substance dictionary for singly indexed substances cited during the 9th Collective Index period of Chemical Abstracts is a companion file to CHEMNAME which contains substances cited more than once since 1972. It is a valuable tool to support specific substance searching and substructure searching via nomenclature in the DIALOG Chemical Information System.

1. **Citation**: CLAIMS/Chem. 1950 - 1970.
(IFI/Plenum Data Company, Arlington, Va.)
Available from Lockheed.

2. **Type of Source**: On-line database.

● General ○ Specific SIC: ______________________

3. **Frequency of Update or Age of Source**: Closed file, not updated.

4. **Type of Chemical Economic Information**:

● Chemical Use
  ● Function
  ● Application
○ Consumption by Use Area
○ Other
○ Price
○ Producers/Processors/Distributors
○ Production/Sales Quantity
○ Physical/Chemical Properties

5. **Format/Means of Access**:

From chemical name and synonyms, chemical class, U.S. Patent classification group and natural language to chemical use.

6. **Limitations/Difficulties**

Retrieves title only. No controlled chemical name index.

7. **Evaluation**

This source contains over 265,000 U.S. chemical and chemically-related patents issued from 1950 - 1970. Approximately 20% of the patents in the file are foreign equivalents. It is a good source of chemical use information.

1. **Citation:** CLAIMS/Chem/Uniterm. 1950 - present.
IFI/Plenum Data Company. Arlington, VA.
Available from Lockheed.

2. **Type of Source:** On-line database.

● General ○ Specific SIC: ____________________

3. **Frequency of Update or Age of Source:** Quarterly.

4. **Type of Chemical Economic Information:**

- ● Chemical Use
  - ● Function
  - ● Application
- ○ Consumption by Use Area
- ○ Other
- ○ Price
- ○ Producers/Processors/Distributors
- ○ Production/Sales Quantity
- ○ Physical/Chemical Properties

5. **Format/Means of Access:**

This source can be searched using a controlled vocabulary of assigned Uniterms, systematic chemical names, synonyms, or classification codes to obtain use information. It includes all patents listed in the chemical section of the U.S. Patent Office Official Gazette and chemically related patents from other sections of the Gazette. Foreign equivalent and C.A. references are also given. The contents parallel the CLAIMS/Chem, CLAIMS/U.S. Patents and CLAIMS/U.S. Patent Abstracts files. The uniterm codes are designed to facilitate retrieval of chemical structures and polymers.

6. **Limitations/Difficulties**

Use information may not always be linked with the chemical of interest. This database is very expensive to use, costing $300 per connect hour.

7. **Evaluation**

This is a valuable source of use information. The uniterm codes allow for easier access to chemical patents. Because of the high cost of connect time, the CLAIMS/Chem/Uniterm database should be used judiciously.

1. **Citation:** CLAIMS/Class.
(IFI/Plenum Data Company, Arlington, VA.)
Available from Lockheed.

2. **Type of Source:** On-line database.

● General ○ Specific SIC: ____________________

3. **Frequency of Update or Age of Source:** Replaced annually.

4. **Type of Chemical Economic Information:**

○ Chemical Use
  ○ Function
  ○ Application
○ Consumption by Use Area
○ Price
○ Producers/Processors/Distributors
○ Production/Sales Quantity
○ Physical/Chemical Properties
● Other: Patent classifications

5. **Format/Means of Access:**

CLAIMS/Class is a dictionary file of the classes and subclasses of the U.S. Patent Classification System.

6. **Limitations/Difficulties:**

This source contains no actual use/economic information, but does serve to make searching of other patent files easier.

7. **Evaluation:**

CLAIMS/Class allows identification of classes and subclasses of patents to permit more comprehensive searching of CLAIMS/Chem, CLAIMS/U.S. Patents 71 - 77, CLAIMS/U.S. Patent Abstracts, 78 - present, and CLAIMS/U.S. Patent Abstracts Weekly.

1. Citation: CLAIMS/U.S. Patent Abstracts. 1978 - present.
CLAIMS/U.S. Patent Abstracts Weekly.
(IFI Plenum Data Company. Arlington, VA.)
Available from Lockheed.

2. Type of Source: On-line database.

● General ○ Specific SIC: ____________________

3. Frequency of Update or Age of Source: Monthly. Weekly file contains patents from the current month, updated weekly. Every month the contents are transferred to the main file.

4. Type of Chemical Economic Information:

● Chemical Use ○ Price
  ● Function ○ Producers/Processors/Distributors
  ● Application ○ Production/Sales Quantity
○ Consumption by Use Area ○ Physical/Chemical Properties
○ Other

5. Format/Means of Access:

This database can be accessed by chemical name and synonyms, chemical class, U.S. Patent Classification groups, and natural language to obtain use information.

6. Limitations/Difficulties:

No controlled vocabulary.

Use information is not always linked to the chemical searched.

7. Evaluation:

This is a good source of chemical use information. In addition to chemical patents, scientific and technical patents are included.

It should be noted that the patent literature is an excellent source of chemical use information particularly for new uses. The literature may be searched manually or on-line, using the data bases available from Lockheed and other vendors. SDC offers the World Patent Index file, covering the major industrial nations. WPI, produced by Derwent Publications, Ltd., could not be evaluated because it is available on-line only by subscription.

1. Citation: CLAIMS/U.S. Patents 1971 - 1977.
(IFI/Plenum Data Company. Arlington, VA.)
Available from Lockheed.

2. Type of Source: On-line database.

● General ○ Specific SIC: ____________

3. Frequency of Update or Age of Source: Quarterly.

4. Type of Chemical Economic Information:

● Chemical Use
  ● Function
  ● Application
○ Consumption by Use Area
○ Other
○ Price
○ Producers/Processors/Distributors
○ Production/Sales Quantity
○ Physical/Chemical Properties

5. Format/Means of Access:

One can search from chemical name and synonyms, U.S. Patent Classification Group, chemical class, and natural language to chemical use.

6. Limitations/Difficulties:

No controlled vocabulary.

7. Evaluation:

This is a good source of use information. Although these are not abstracts, patent titles regularly contain use information.

1. **Citation:** Colour Index. 1971.
3rd Edition. 5 Volumes.
American Association of Textile Chemists & Colorists.
Research Triangle Pk., NC.

2. **Type of Source:** Directory.

○ General ● Specific SIC: 2865 Dyes.
2899

3. **Frequency of Update or Age of Source:** Supplement and revision published in 1975; quarterly update publication.

4. **Type of Chemical Economic Information:**

● Chemical Use
  ● Function
  ● Application
○ Consumption by Use Area
○ Other
○ Price
● Producers/Processors/Distributors
○ Production/Sales Quantity
● Physical/Chemical Properties

5. **Format/Means of Access:**

Volumes 1-3 list colorants according to their generic types (acid, azoic, basic) and applications (leather, etc.) with C.I. names, which fibers the colorant dyes or prints, fastness properties, and non-textile uses.

Volume 4 lists dyes by C.I. name and is arranged according to generic type with formulas for the dyes.

The first section of Volume 5 lists dyes by generic type and C.I. name and gives the manufacturer. The second section lists trade names with manufacturer and C.I. name.

6. **Limitations/Difficulties:**

There is no index from C.I. name to application. To obtain the desired information, it is frequently necessary to refer to more than one volume.

7. **Evaluation:**

The Colour Index is a good source if searching from application to C.I. name. Then Volume 4 must be used to go from C.I. name to formula or Vol. 5 to go from C.I. name to manufacturer. It is much harder to search in reverse since there is no index of C.I. name to application.

The Colour Index is the leading reference in the field of colorants.

1. Citation: Commercial Names and Sources. 1978.
The International Plastics Selector, Inc.
San Diego, CA.

2. Type of Source: Directory and guidebook.

o General ● Specific SIC: 282-Plastic Materials and Synthetics.
3079-Miscellaneous Plastic Products.

3. Frequency of Update or Age of Source: About every two years.

4. Type of Chemical Economic Information:

● Chemical Use
  ● Function
  o Application
o Consumption by Use Area
o Other

o Price
● Producers/Processors/Distributors
o Production/Sales Quantity
o Physical/Chemical Properties

5. Format/Means of Access:

The first section lists alphabetically the commercial name with material type (additive, foam, elastomer, etc.), generic name (if resin), function (if additive) or color (if colorant), manufacturer and sometimes chemical type.

The second section lists the material type (see above) alphabetically with generic name-function-color as subcategories.

6. Limitations/Difficulties:

There is no index of generic chemical names.

7. Evaluation:

This is a good source if searching from function to commercial name, manufacturer and sometimes chemical type. Also good if searching from commercial name to manufacturer, function and sometimes chemical type.

1. **Citation:** Commercial Organic Flocculants. 1976.
J. Vostrcil & F. Juracka.
Noyes Data Corp., Park Ridge, N.J.

2. **Type of Source:** Handbook-Guidebook.

○ General

● Specific Flocculants

SIC: Water Treating Compounds 2899
Industrial Inorganic Chemicals 2819

3. **Frequency of Update or Age of Source:** 1976 - no current plans to update.

4. **Type of Chemical Economic Information:**

- ● Chemical Use
    - ○ Function
    - ● Application
- ○ Consumption by Use Area
- ○ Other
- ○ Price
- ● Producers/Processors/Distributors
- ○ Production/Sales Quantity
- ● Physical/Chemical Properties

5. **Format/Means of Access:**

The first section lists flocculants according to chemical composition (the order can be obtained from the table of contents). Among other information, it also gives examples of applications.

The second section lists flocculants alphabetically by trade name, most with composition, physical properties; sometimes with recommended dosages and manufacturer.

6. **Limitations/Difficulties:**

Sections are not arranged by individual chemicals.

7. **Evaluation:**

This is a good source if searching from type of flocculant to type of application or if searching from trade name to recommended dosage.

1. **Citation:** Commercially Available Chemical Agents for Paper and Board Manufacturers. 1980.
Walter F. Reynolds, ed.
PAPY Press Report. Atlanta, GA.

2. **Type of Source:** Report.

○ General ● Specific SIC: 261 Pulp Mills

3. **Frequency of Update or Age of Source:**

4. **Type of Chemical Economic Information:**

- ● Chemical Use
  - ○ Function
  - ● Application
- ○ Consumption by Use Area
- ○ Other
- ○ Price
- ● Producers/Processors/Distributors
- ○ Production/Sales Quantity
- ○ Physical/Chemical Properties

5. **Format/Means of Access:**

This source lists trade names of chemicals with their manufacturers in tabular form, arranged by function. An index of trade names is provided.

6. **Limitations/Difficulties:**

There is no access to or by generic chemical names; only trade names are used. There is no access from trade name (chemical) to use.

7. **Evaluation:**

This source is useful only if identification of trade names and manufacturers for a given function is desired. Searching from chemical to use is not practical. A source that identifies the chemical composition of trade named products must be used to identify specific chemicals or chemical classes.

1. Citation: Compendex. January 1970 - present.
(Engineering Index, N.Y., N.Y.)
Available from SDC and Lockheed.

2. Type of Source: On-line database.

● General ○ Specific SIC: ____________________

3. Frequency of Update or Age of Source: Monthly.

4. Type of Chemical Economic Information:

● Chemical Use
  ● Function
  ● Application
○ Consumption by Use Area
○ Other
○ Price
○ Producers/Processors/Distributors
○ Production/Sales Quantity
○ Physical/Chemical Properties

5. Format/Means of Access:

This file can be searched by chemical name in the index and in the free text to obtain use information. Only well-known chemicals or chemical classes appear in the general index; others might be found in the text of the abstract or in the citation.

6. Limitations/Difficulties:

Only broad chemical terms are in the controlled vocabulary. One should also search by synonyms and chemical class when necessary. Economic information is very general, e.g., "a low-cost production process", and there is very little hard economic data.

7. Evaluation:

This data base is a valuable source of information on the applications of organic chemicals, as well as metals and their alloys. It is particularly useful for novel applications.

The information in COMPENDEX encompasses many industries, i.e., plastics, rubber, coal, petroleum, paper, printing, textiles; therefore this data base is an excellent overall source for the use of chemicals in a broad range of industries and technologies. It should be given a high priority after hard-core chemical and economic data bases.

1. Citation: The Condensed Chemical Dictionary. 1977.
   G. G. Hawley, ed. Van Nostrand Reinhold Co. New York.

2. Type of Source: Dictionary.

   ● General ○ Specific SIC: ______________________

3. Frequency of Update or Age of Source: Irregular.

4. Type of Chemical Economic Information:

   ● Chemical Use
      ● Function
      ● Application
   ○ Consumption by Use Area
   ● Other: Synonyms
   ○ Price
   ○ Producers/Processors/Distributors
   ○ Production/Sales Quantity
   ● Physical/Chemical Properties

5. Format/Means of Access:

   ● From individual chemical to use information.

   ● Alphabetical arrangement of chemicals as a direct link to use information.

   ● Also included are synonyms cross-referenced to preferred names.

6. Limitations/Difficulties:

   Function and application are sometimes difficult to tell apart, although both are usually included under uses. This source is easy to use, readily available and comprehensive.

7. Evaluation:

   This is an excellent general source for chemical use information. It should be included among the first sources consulted in developing chemical economic information.

1. **Citation:** Conference Papers Index. 1973 to present.
(Data Courier, Inc., Louisville, KY.)
Available from Lockheed and SDC.

2. **Type of Source:** On-line database.

● General ○ Specific SIC: ____________________

3. **Frequency of Update or Age of Source:** Monthly.

4. **Type of Chemical Economic Information:**

● Chemical Use
  ● Function
  ● Application
○ Consumption by Use Area
○ Other
○ Price
○ Producers/Processors/Distributors
○ Production/Sales Quantity
○ Physical/Chemical Properties

5. **Format/Means of Access:**

Conference Papers Index is searchable from chemical name and synonyms to use; by activity or use, through natural language, to chemical.

6. **Limitations/Difficulties:**

A search produces only citations; therefore, one must often consult original documents for information.

7. **Evaluation:**

This is an index of current research papers presented at conferences and meetings throughout the world. Biochemistry and Chemistry, and Chemical Engineering, which are two of the major subject areas, constitute approximately 16% of the file. Some, but not all, chemical names are included in the index (personal commentary, S. Kennedy, Data Courier).

1. Citation: Dictionary of Commercial Chemicals. 1962.
   Snell & Snell. 3rd Ed.
   Van Nostrand Co., Inc., Princeton, N.J.

2. Type of Source: Dictionary.

   ● General   ○ Specific SIC: ____________________

3. Frequency of Update or Age of Source: Out of print.

4. Type of Chemical Economic Information:

   ● Chemical Use
     ● Function
     ● Application
   ○ Consumption by Use Area
   ○ Other
   ○ Price
   ○ Producers/Processors/Distributors
   ○ Production/Sales Quantity
   ● Physical/Chemical Properties

5. Format/Means of Access:

   The book is divided into about 40 different chapters on classes of chemicals (i.e., inorganic oxides, alcohols and mercaptans, waxes). Each chapter lists alphabetically specific chemicals with short narratives about physical properties, methods of manufacture (reactions) and major categories of uses.

6. Limitations/Difficulties:

   This source provides only superficial use information. Since it is arranged by chemical class, a knowledge of chemical classification is required for efficient utilization of this work.

7. Evaluation:

   The Dictionary of Commercial Chemicals gives a very superficial look at uses of chemicals. However, like all dictionaries, it is a good source to use as a "glossary" to determine the chemical structure of an unfamiliar term or name.

1. **Citation:** Domestic & Industrial Chemical Specialties. 1966. L. Chalmer. MacMillan Co., N.Y.

2. **Type of Source:** Book.

   ○ General ● Specific SIC: Specialty Cleaning Polishing and Sanitation Preparations 2842

   Household Products

3. **Frequency of Update or Age of Source:** Out of Print.

4. **Type of Chemical Economic Information:**

● Chemical Use	○ Price
● Function	● Producers/Processors/Distributors
● Application	○ Production/Sales Quantity
○ Consumption by Use Area	○ Physical/Chemical Properties
● Other: Formulations	

5. **Format/Means of Access:**

   The text is in narrative form and includes formulations using generic names. Topics covered include Soap, Synthetic Detergents, Laundry Syndets, Laundry Bleaches, Mothproofing, Insect Pest Control, Polishes, Adhesives, Disinfectants and Antiseptics, Aerosols, Paints, Abrasives and Polishes, Toiletries.

   Appendix II is an alphabetical list of chemical trade names with producers, chemical class, and application.

   The index gives both end-use applications and chemicals (specific and classes).

6. **Limitations/Difficulties:**

7. **Evaluation:**

   Although this book is over 14 years old, it can act as a general source of information on both specific chemicals and chemical classes used in household products.

1. Citation: Dry Cell Batteries: Chemistry & Design. 1973.
   Louis F. Martin.
   Noyes Data Corp., Park Ridge, N.J.

2. Type of Source: Patent collection.

   ○ General ● Specific SIC: 3691 Storage Batteries.

3. Frequency of Update or Age of Source: 1973 is latest edition.

4. Type of Chemical Economic Information:

   ● Chemical Use
     ● Function
     ○ Application
   ○ Consumption by Use Area
   ○ Other
   ○ Price
   ○ Producers/Processors/Distributors
   ○ Production/Sales Quantity
   ○ Physical/Chemical Properties

5. Format/Means of Access:

   This book lists 130 recent patents for storage batteries. The patents describe and give formulations for materials that make up batteries (e.g., electrodes, separators, sealants, electrolytes, etc.).

6. Limitations/Difficulties:

   There is no means of searching from a specific chemical to find its use.

7. Evaluation:

   This is a good source for new developments in the battery industry up to 1973. Searching from function (in a battery) to the specific chemical is easy.

1. Citation: Dry Strength Additives. 1980.
Reynolds, W.F., ed.
PAPY Press. Atlanta, GA.

2. Type of Source: Book.

○ General ● Specific SIC: 261 Pulp Mills.

3. Frequency of Update or Age of Source:

4. Type of Chemical Economic Information:

● Chemical Use
○ Function
● Application
○ Consumption by Use Area
○ Other
○ Price
● Producers/Processors/Distributors
○ Production/Sales Quantity
○ Physical/Chemical Properties

5. Format/Means of Access:

Chemical trade names are listed according to applications (e.g., paper, board, etc.), with manufacturer name. Also included is an index of the trade names.

6. Limitations/Difficulties:

There is no access to chemicals by generic chemical name.

7. Evaluation:

This book provides a link between trade names and applications in the paper industry. Access is only by trade name, not by generic name.

1. Citation: Economic Abstracts International. 1974 to present. (Learned Information, Ltd., London, England.) Available from Lockheed.

2. Type of Source: On-line database.

   ● General ○ Specific SIC: ________________

3. Frequency of Update or Age of Source: Monthly.

4. Type of Chemical Economic Information:

   ○ Chemical Use
      ○ Function
      ○ Application
   ● Consumption by Use Area
   ○ Other
   ● Price
   ● Producers/Processors/Distributors
   ● Production/Sales Quantity
   ○ Physical/Chemical Properties

5. Format/Means of Access:

   Economics Abstracts International can be searched from chemical name, synonyms, British spellings, chemical class or chemical industry to use, as well as from use to chemical or broad class of chemicals.

6. Limitations/Difficulties:

   "Abstracts" are, in fact, annotations. It may be necessary to consult the original documents to determine relevance.

7. Evaluation:

   This is an excellent database for international economic data, primarily by industry. Coverage includes books, dictionaries and economic reports.

   Some use information is given.

1. Citation: Elastomeric Materials. 1977.
International Plastics Selector, Inc.
San Diego, CA.

2. Type of Source: Handbook.

○ General ● Specific SIC: 30-Rubber & Plastic Products.

3. Frequency of Update or Age of Source: 1977 - new edition scheduled for 1980.

4. Type of Chemical Economic Information:

● Chemical Use
  ● Function
  ● Application
○ Consumption by Use Area
○ Other
○ Price
● Producers/Processors/Distributors
○ Production/Sales Quantity
● Physical/Chemical Properties

5. Format/Means of Access:

The first section lists elastomers by their stretchability or "value" with commercial name, generic type, manufacturer, and page reference for more information.

The second section lists elastomers by generic type (polyester, ethylene, etc.) in groups arranged by physical characteristic or type of application (thermoplastic, liquids, gums, formulated products) with manufacturer, commercial name, special features, suggested applications, and physical properties.

Another section lists additives alphabetically by trade name with generic name, function, and manufacturer. There is also a section of generic names of elastomers arranged alphabetically with manufacturers and trade names.

A section listing commercial names with generic names and manufacturers is included.

7. Limitations/Difficulties:

8. Evaluation:

This is a good source if searching from elastomer (generic or trade name) to application, or from additive trade name to function. It permits a researcher to relate the generic chemical or chemical class to application and function of a chemical.

1. Citation: Encyclopedia of Associations. Vol.1 National Organizations of the United States. 1980.
N. Yakes and D. Akey, eds., Gale Research Company. Detroit, Michigan.

2. Type of Source: Encyclopedia.

● General ○ Specific SIC: ____

3. Frequency of Update or Age of Source: Annual.

4. Type of Chemical Economic Information:

○ Chemical Use
  ○ Function
  ○ Application
○ Consumption by Use Area
○ Other
○ Price
○ Producers/Processors/Distributors
○ Production/Sales Quantity
○ Physical/Chemical Properties

5. Format/Means of Access:

Individual organizations are accessed by an alphabetical and key word index.

They are grouped by broad subject areas within the volume and arranged alphabetically within each subject area.

6. Limitations/Difficulties:

7. Evaluation:

This volume includes detailed descriptions, addresses and telephone numbers of over 14,000 associations and professional societies.

A number of these organizations can be contacted directly to provide rapid, current information on chemical economic subjects.

1. Citation: Encyclopedia of Chemistry. 1973.
Van Nostrand Reinhold Co., New York.

2. Type of Source: One-volume encyclopedia.

● General ○ Specific SIC: ________________

3. Frequency of Update or Age of Source: Covers advances in chemistry since 1966.

4. Type of Chemical Economic Information:

- ● Chemical Use
  - ● Function
  - ● Application
- ○ Consumption by Use Area
- ● Other: Natural occurrence, History, Processes
- ○ Price
- ○ Producers/Processors/Distributors
- ○ Production/Sales Quantity
- ● Physical/Chemical Properties

5. Format/Means of Access:

This book is arranged alphabetically. Entries include chemical names, chemical classes, use categories (e.g., soaps), and general chemical terms. The volume has an index, which includes specific chemical names and provides cross references. This source combines the completeness of longer, encyclopedia-style entries with the convenience of a single volume.

6. Limitations/Difficulties:

Use information is generally given in rather broad terms. Other economic information is sometimes provided. Although some entries have separate headings for use and/or other economic factors, it is necessary to scan the entire text of an entry to be certain the information obtained is complete.

7. Evaluation:

The Encyclopedia of Chemistry should be consulted when use information is particularly desired, as well as for a general overview of a chemical or chemical classes. This source should be among the first consulted, although there are others which provide the same or more information in a briefer format.

1. Citation: Encyclopedia of Surface-Active Agents. 1952.
Sisley & Mood.
Chemical Publishing Co., N.Y.

2. Type of Source: Encyclopedia.

○ General ● Specific SIC: 2843-Surface-Active Agents.

3. Frequency of Update or Age of Source: New edition - 1980.

4. Type of Chemical Economic Information:

● Chemical Use

  ○ Function

  ● Application

○ Consumption by Use Area

○ Other

○ Price

● Producers/Processors/Distributors

○ Production/Sales Quantity

○ Physical/Chemical Properties

5. Format/Means of Access:

One chapter summarizes areas of application for surface-active agents according to industry (textile, etc.) and function (flotation, etc.). In another chapter classes of fatty acids are listed according to their precursors (e.g., fats, fatty acid esters, etc.). The classes are described narratively and brief accounts of their properties, manufacture and uses are given. The last section lists brand names of surface-active agents alphabetically with manufacturing composition and recommended applications. Vol. II appeared in 1964 and has a similar format.

6. Limitations/Difficulties:

Individual chemicals are not listed by their generic names.

7. Evaluation:

This is a good source if searching from brand name to manufacturer or generic name.

1. **Citation:** Environmental Chemicals Data and Information Network (ECDIN). 1973 - present (Joint Research Center of European Communities, Ispra, Italy.)

2. **Type of Source:** On-line database.
Available through the European Information Network.

● General ○ Specific SIC: ____________________

3. **Frequency of Update or Age of Source:** Irregular.

4. **Type of Chemical Economic Information:**

- ● Chemical Use
  - ● Function
  - ● Application
- ● Consumption by Use Area
- ○ Price
- ● Producers/Processors/Distributors
- ● Production/Sales Quantity
- ● Physical/Chemical Properties
- ● Other: Environmental effects and fate.
  Synonyms (European trade names).

5. **Format/Means of Access:**

ECDIN can be searched by preferred systematic chemical name, common name, trade name, name in several languages or CAS number to obtain use or economic data and from use to chemical.

Information on over 4,000 compounds is displayed as citations and data.

6. **Limitations/Difficulties:**

Access is by request to the Joint Research Center in Europe.

7. **Evaluation:**

This database contains chemical economic data for commercial chemicals produced in excess of 500 Kg/year, their by-products and metabolic degradation products. However, it can be accessed only by writing or calling the Joint Research Center in Italy.

1. Citation: Faith, Keyes and Clark's Industrial Chemicals. 1975.
F. A. Lowenheim and M. K. Moran, eds.
John Wiley and Sons. New York.

2. Type of Source: Handbook.

● General ○ Specific SIC: ____________________

3. Frequency of Update or Age of Source: Irregular.

4. Type of Chemical Economic Information:

● Chemical Use
  ○ Function
  ● Application
● Consumption by Use Area
○ Other
● Price
● Producers/Processors/Distributors
● Production/Sales Quantity
● Physical/Chemical Properties

5. Format/Means of Access:

● From individual chemical to economic information.

● Contains index and alphabetical arrangement of chemicals as direct link to economic information.

● Each chemical included has a separate chapter which contains a complete market analysis. Each chapter describes one or more manufacturing processes for the chemical, shows consumption percentages by use area, and includes a graphic representation of price and production history. Physical properties and shipping regulations are noted, along with a list of manufacturers and plant sites. A lengthy discussion of economic factors provides an overall assessment of the chemical's status.

6. Limitations/Difficulties:

Only a small number of major chemicals are included. For chemicals not having separate sections, some information may be gleaned by examining the pages referenced in the index. Here, some material can be gathered on chemicals used in the manufacturing processes of the featured chemical, or on substances replacing or being replaced by the featured chemical.

Faith, Keyes and Clark's Industrial Chemicals (Continued)

7. Evaluation:

Although this source includes only a small number of chemicals, coverage of economic aspects is thorough and complete. This source provides an excellent overview and starting point for developing assessments of the chemicals featured.

1. **Citation:** Fert Flash
(The Fertilizer Institute, Washington, D.C.)

2. **Type of Source:** Monthly report.

○ General ● Specific SIC: 2873 - Nitrogenous Fertilizer.

3. **Frequency of Update or Age of Source:** Monthly.

4. **Type of Chemical Economic Information:**

○ Chemical Use

  ○ Function

  ○ Application

○ Consumption by Use Area

○ Other

○ Price

○ Producers/Processors/Distributors

● Production/Sales Quantity

○ Physical/Chemical Properties

5. **Format/Means of Access:**

From a survey of manufacturers, preliminary data are presented in tabular form on production of nine major product groups of fertilizer, such as ammonias, potash, and phosphates.

6. **Limitations/Difficulties:**

The statistics presented are not final figures and may therefore be subject to change.

7. **Evaluation:**

This is a good source of data on bulk fertilizer production.

1. **Citation:** **The Fertilizer Index**
(The Fertilizer Institute, Washington, D.C.)

2. **Type of Source:** Report.

   ○ General ● Specific SIC: 2873 Nitrogenous Fertilizers.

3. **Frequency of Update or Age of Source:** Annual.

4. **Type of Chemical Economic Information:**

○ Chemical Use	● Price
○ Function	○ Producers/Processors/Distributors
○ Application	● Production/Sales Quantity
○ Consumption by Use Area	○ Physical/Chemical Properties
○ Other	

5. **Format/Means of Access:**

   The Fertilizer Index presents tabulated and written summaries of major fertilizer groups (nitrogen, phosphates, potash and mixtures) for the previous eleven months, as well as monthly production, inventory and disappearance data. Data is for five to eight major products in each group.

   Data is also presented in terms of "index value" where 100 is the previous year's average monthly tonnage.

6. **Limitations/Difficulties:**

   Production statistics are not provided in great detail.

7. **Evaluation:**

   This is a good source of statistical data on production of major groups of fertilizers. However, the Census of Manufacturers would give more in-depth information about production.

1. **Citation:** Fire Retardants Formulations. 1972, last edition.
Vijay Mohar Bhatnagar
Technomic Publishing Co. Westport, Conn.

2. **Type of Source:** Formulary.

○ General ● Specific SIC: 2899
Fire Retardants

3. **Frequency of Update or Age of Source:** Book now discontinued.

4. **Type of Chemical Economic Information:**

● Chemical Use
  ○ Function
  ● Application
○ Consumption by Use Area
○ Other
○ Price
○ Producers/Processors/Distributors
○ Production/Sales Quantity
○ Physical/Chemical Properties

5. **Format/Means of Access:**

Subjects are accessed through the Table of Contents. The topics covered include Wood and Paints, Polymers, Textile-Fabrics and Paper, and General Formulation. The formulations under each heading are not arranged in any particular order. Almost every formulation contains trade names only. There is an author and a subject index. The subject index includes applications, but not specific chemicals.

6. **Limitations/Difficulties:**

If combined with a sourcebook of trade names, one can search from application to chemical. It is impossible to search from chemical to application without reading the entire book.

7. **Evaluation:**

(See #6 above.)

1. **Citation**: **Foams**. 1978.
The International Plastics Selector. San Diego, CA.

2. **Type of Source**: Handbook.

○ General ● Specific SIC: 282-Plastics Materials and Synthetics.
3079-Miscellaneous Plastic Products.

3. **Frequency of Update or Age of Source**: About every 2 years.

4. **Type of Chemical Economic Information**:

● Chemical Use
  ● Function
  ● Application
○ Consumption by Use Area
○ Other
○ Price
● Producers/Processors/Distributors
○ Production/Sales Quantity
● Physical/Chemical Properties

5. **Format/Means of Access**:

This book provides information on the manufacture of thermosetting and thermoplastic foams, and the additives used in the formulation of foams. The book is accessed through the Table of Contents to the class of foams, engineering data and additive sections.

Each section indexes relevant information.

The sections on foams discusses foam ingredients, methods of processing, and engineering data.

The engineering data sections provide information on manufacturer, trade name, physical properties, etc.

The section on additives, describes the additives in short dictionary-type format. An alphabetical table lists the additives according to functional type, with manufacturer, trade name and generic chemical name.

6. **Limitations/Difficulties**:

7. **Evaluation**:

This is a good listing of foams and additives, enabling one to search from chemical class and function to specific chemical or manufacturer.

1. **Citation:** **Food, Science and Technology Abstracts**. 1969 - present.
(International Food Information Service, Shenfield, Reading, Berkshire, England.)
Available from SDC and Lockheed as FSTA.

2. **Type of Source:** On-line database.

○ General ● Specific SIC: 2087, 2899, 2865
Food industry.

3. **Frequency of Update or Age of Source:** Monthly.

4. **Type of Chemical Economic Information:**

- ● Chemical Use
  - ● Function
  - ● Application
- ○ Consumption by Use Area
- ○ Other
- ● Price (occasionally)
- ○ Producers/Processors/Distributors
- ○ Production/Sales Quantity
- ○ Physical/Chemical Properties

5. **Format/Means of Access:**

This database can be searched by chemical name, trade name, synonyms and alternate spellings, and chemical class to find chemical use information. Also from chemical use (e.g., preservative) to chemical.

6. **Limitations/Difficulties:**

The chemical aspects of this index focuses on chemicals in foods, such as additives or residues, and the chemical analysis of foods.

While there is some information on the price of additives, most economic statistics are for the foods themselves.

No controlled vocabulary.

7. **Evaluation:**

Since this database concerns only chemicals used in the food industry, it is of limited utility to EPA.

1. **Citation:** Hackh's Chemical Dictionary. 1969.
Julius Grant. McGraw-Hill Book Co., New York.

2. **Type of Source:** Dictionary.

● General   ○ Specific SIC: ____________________

3. **Frequency of Update or Age of Source:** Irregular.

4. **Type of Chemical Economic Information:**

● Chemical Use
  ○ Function
  ● Application
○ Consumption by Use Area
○ Other
○ Price
○ Producers/Processors/Distributors
○ Production/Sales Quantity
○ Physical/Chemical Properties

5. **Format/Means of Access:**

● From individual chemical to economic information.

● Contains alphabetical arrangement of chemicals as a direct link to economic information.

Hackh's has an easy-to-use dictionary format.

6. **Limitations/Difficulties:**

This dictionary covers chemical economic information poorly. A great many entries are not actually chemicals but related substances or topics, often with unfamiliar nanes. Chemical use, the only economic factor dealt with at all, receives little attention.

7. **Evaluation:**

Hackh's Chemical Dictionary is a poor source of chemical economic information. It could be useful for identification of unfamiliar or little used terminology, but is not recommended as a source of chemical economic data.

1. **Citation**: **Handbook of Adhesives**. 1977.
I. Skeist, ed. 2nd Edition.
Van Nostrand Reinhold Co., N.Y.

2. **Type of Source**: Handbook.

○ General ● Specific SIC: 2891 Adhesives & Sealants.

3. **Frequency of Update or Age of Source**: Irregular; latest edition, 1977.

4. **Type of Chemical Economic Information**:

● Chemical Use ○ Price

● Function ○ Producers/Processors/Distributors

● Application ○ Production/Sales Quantity

○ Consumption by Use Area ● Physical/Chemical Properties

● Other: Formulations

5. **Format/Means of Access**:

Section A contains five articles on topics general to all adhesives (constitution, influence, application, testing, etc.).

Section B contains thirty-five articles, each dealing with a specific type of adhesive.

Section C has sixteen articles, each dealing with a particular application of adhesives (plastic, wood, electrical industry, etc.). Sometimes formulations are given in Sections B and C, many times with brand-name chemicals.

6. **Limitations/Difficulties**:

The index contains terms relating more to applications than to specific chemicals.

7. **Evaluation**:

The Handbook of Adhesives is an acceptable source for obtaining a number of different adhesive formulations appropriate to a given application.

1. **Citation:** Handbook of Cosmetic Materials. 1954.
Greenberg & Lester. Interscience, N.Y.

2. **Type of Source:** Dictionary.

○ General ● Specific SIC: 2844 Toiletries

3. **Frequency of Update or Age of Source:** Out of print.

4. **Type of Chemical Economic Information:**

● Chemical Use
  ● Function
  ● Application
○ Consumption by Use Area
○ Other
○ Price
○ Producers/Processors/Distributors
○ Production/Sales Quantity
● Physical/Chemical Properties

5. **Format/Means of Access:**

This is an alphabetical listing of ingredients and generic chemicals used in the making of cosmetics. The handbook contains formulas, a few properties, and very general uses (e.g., "perfumery and flavoring").

6. **Limitations/Difficulties:**

The Handbook of Cosmetic Materials is over 25 years old, and out of print.

7. **Evaluation:**

It has value only for obtaining chemical formulas of ingredients in cosmetics. The age of the material must be considered.

1. **Citation:** Handbook of Materials and Processes for Electronics. 1970.
Charles A. Harper, ed.
McGraw-Hill Co., New York, N.Y.

2. **Type of Source:** Handbook.

o General ● Specific SIC: 367 Electronic Components and Accessories.

3. **Frequency of Update or Age of Source:**

4. **Type of Chemical Economic Information:**

● Chemical Use
  ● Function
  ● Application
o Consumption by Use Area
o Other
o Price
o Producers/Processors/Distributors
o Production/Sales Quantity
● Physical/Chemical Properties

5. **Format/Means of Access:**

This book is divided into fifteen sections, each of which describes classes of materials or fabricating processes used in the electronics industry (e.g., plastics, elastomers, semiconductor materials, metallic and chemical finishes, etc.). The text is in narrative form and contains a good deal of information on physical properties of materials and their fabrication/production for electrical applications. It does not, however, give recommendations for applications of the materials (like plastics). The index includes functions and chemical classes.

6. **Limitations/Difficulties:**

Access is to chemical classes, rather than individual chemicals.

7. **Evaluation:**

This is a good source for searching from the electronic component (wires, cables, semiconductors, films) to the class of chemical used in their manufacture or from the function (moisture protector, coatings) to chemical class.

1. **Citation:** Handbook of Water-Soluble Gums and Resins. 1980.
R. L. Davidson, ed.
McGraw-Hill, New York.

2. **Type of Source:** Handbook.

o General ● Specific SIC: 2861, 2899
Water-soluble gums and resins in a wide variety of industries.

3. **Frequency of Update or Age of Source:** New.

4. **Type of Chemical Economic Information:**

● Chemical Use
  ● Function
  ● Application
o Consumption by Use Area
● Other: Formulations
  Trade names
o Price
o Producers/Processors/Distributors
● Production/Sales Quantity
● Physical/Chemical Properties

5. **Format/Means of Access:**

This book covers twenty-three major commercial varieties of natural and synthetic gums and resins. It contains surveys of consuming industries and includes material on physical properties, processes and toxicology for the gums and resins. There are also sample formulations and a list of trade names. The book is arranged to be searchable under gum or resin name, basic function, end product, industry, property or characteristic. There is also an index.

6. **Limitations/Difficulties:**

This source was not available for examination. It was evaluated based on the publisher's advertising circular; therefore, no shortcomings were apparent.

7. **Evaluation:**

This work seems to be a good and useful source of information on the various types of water-soluble gums and resins.

An objective evaluation is not possible without having the book available for inspection.

1. **Citation**: Imports of Benzenoid Chemicals.
U.S. International Trade Commission.
U.S. Government Printing Office.
Washington, D.C.

2. **Type of Source**: Government statistical report.

○ General ● Specific SIC: Cyclic Intermediates 2865
Benzenoid Chemicals.

3. **Frequency of Update or Age of Source**: Annual.

4. **Type of Chemical Economic Information**:

● Chemical Use
  ○ Function
  ○ Application
● Consumption by Use Area
● Other: Import Data.

○ Price
○ Producers/Processors/Distributors
○ Production/Sales Quantity
○ Physical/Chemical Properties

5. **Format/Means of Access**:

● From chemical class to economic information. Import information is arranged in tables by chemical class and use area. These include benzenoid intermediates, finished benzenoid products, dyes, and several other groups. There is no index, so access to chemicals is frequently random, unless a chemical is known to belong to one of the categories listed in the table of contents. If this information is not available, table by table scanning of the entire publication may be necessary. The large table of benzenoid intermediates is a good starting point.

6. **Limitations/Difficulties**:

One drawback to the use of this source is that its coverage is limited to benzenoid chemicals. Also, it supplies only import data. (A small amount of use information can sometimes be derived indirectly by noting the heading of the table in which the chemical appears.) A final problem is the lack of a straight-forward means of locating the desired chemical.

7. **Evaluation**:

Although limited in coverage and scope, Imports of Benzenoid Chemicals is an important source of import statistics. When used in conjunction with U.S. Imports for Consumption, a much broader coverage of chemical imports is achieved. This source is an official government publication and is considered reliable.

1. Citation: Industrial Solvents Handbook. 1977.
I. Mellan.
2nd Edition.
Noyes Data Corp., Park Ridge, N.J.

2. Type of Source: Handbook.

● General ○ Specific SIC: ______________________

3. Frequency of Update or Age of Source: 1st edition was 1970.

4. Type of Chemical Economic Information:

- ○ Chemical Use
  - ○ Function
  - ○ Application
- ○ Consumption by Use Area
- ○ Other
- ○ Price
- ○ Producers/Processors/Distributors
- ○ Production/Sales Quantity
- ● Physical/Chemical Properties

5. Format/Means of Access:

The book is divided into fourteen chapters by chemical classes (e.g., hydrocarbon solvents, phenols, acids, etc.). The table of contents lists all the elements covered in each chapter by order of complexity (simple molecules to large molecules). The text gives physical property data in tabular or graphical form.

Also included is a chapter comparing the physical properties of all the chemicals covered (molecular weight, density, melting point, boiling point). The chemicals in this chapter are listed as they appear in the earlier chapters.

6. Limitations/Difficulties:

This handbook contains only physical property data; no other use/ economic information is available.

7. Evaluation:

This is a good source of physical property data for chemicals used as solvents. This information is particularly helpful for predicting a chemical's suitability to a given use.

1. **Citation:** ISMEC. Information Service in Mechanical Engineering.
1973 to present.
(Data Courier, Inc., Louisville, KY.)
Available from SDC and Lockheed.

2. **Type of Source:** On-line database.

○ General ● Specific SIC: ____________________

3. **Frequency of Update or Age of Source:** Monthly.

4. **Type of Chemical Economic Information:**

● Chemical Use	○ Price
● Function	○ Producers/Processors/Distributors
● Application	○ Production/Sales Quantity
○ Consumption by Use Area	● Physical/Chemical Properties
● Other: Chemical properties and effects.	

5. **Format/Means of Access:**

Using controlled vocabulary, one can search from broad terms, such as "chemical industry" or "chemical properties and effects" to chemicals as well as from use to chemical. Metals and their alloys are also in the controlled vocabulary.

Chemical names, synonyms and British spellings can be searched in free text.

6. **Limitations/Difficulties:**

There are no chemical names in the controlled vocabulary.

This is an indexing service to citations. Therefore, it may be necessary to consult the original document.

7. **Evaluation:**

This is a good source of use information for chemicals associated with the fields of mechanical engineering. In addition to international journals, the index covers relevant books, reports and conference proceedings.

1. Citation: Kirk-Othmer Encyclopedia of Chemical Technology. 1970. John Wiley & Sons. New York. 2nd Edition, 3rd Edition, 1978-80 (in progress).

2. Type of Source: Encyclopedia.

   ● General   ○ Specific SIC: ______

3. Frequency of Update or Age of Source: Irregular intervals; update in progress.

4. Type of Chemical Economic Information:

   ● Chemical Use
      ● Function
      ● Application
   ● Consumption by Use Area
   ○ Other
   ● Price
   ● Producers/Processors/Distributors
   ● Production/Sales Quantity
   ● Physical/Chemical Properties

5. Format/Means of Access:

   ● From individual chemical or chemical class to economic/use information.

   ● Contains an index as a direct link to information.

   ● Kirk-Othmer is a comprehensive chemical encyclopedia. Sometimes a chemical is the subject of an entire chapter; other chemicals are accessed via the index. The encyclopedia focuses on chemical technology, so there are sections on such aspects as production processes, shipping and quality control. Sections on uses and economic aspects include information on price, production volumes and consumption by use area, where available.

   The new 3rd edition of Kirk-Othmer is currently in preparation, with at least eight to ten volumes available at present. For complete and up-to-date coverage, both the entire 2nd edition and the completed volumes of the 3rd edition must be searched. Interim indexes to the 3rd edition are published after every few volumes; however, the only way to access a new volume before it is indexed is through the tables of contents. Overlap between the two editions is insufficient to allow cross-searching.

Kirk-Othmer Encyclopedia of Chemical Technology (Continued)

7. **Limitations/Difficulties:**

Kirk-Othmer can be cumbersome to use in its present status, with one edition complete and another under way. Locating information on more obscure chemicals may involve examining a number of volumes of the encyclopedia. More complete material can be found, with greater ease, for major chemicals, especially those which have entire chapters devoted to them. Since Kirk-Othmer is not published frequently, data on such factors as price and production volume are not up-to-date. These figures are very useful for examining historical trends.

8. **Evaluation:**

Kirk-Othmer is a good source of chemical economic information. It contains data and analyses of all aspects of its subject and provides a valuable background for in-depth research.

1. **Citation**: *The Kline Guide to the Chemical Industry*. 1977.
   Mary K. Meegan, ed. Charles H. Kline & Co.
   Fairfield, New Jersey.

2. **Type of Source**: Handbook.

   ● General   o Specific SIC: ______________

3. **Frequency of Update or Age of Source**: Irregular.

4. **Type of Chemical Economic Information**:

   ● Chemical Use
      ● Function
      ● Application
   ● Consumption by Use Area
   o Other
   ● Price
   ● Producers/Processors/Distributors
   ● Production/Sales Quantity
   o Physical/Chemical Properties

5. **Format/Means of Access**:

   ● From individual chemical and chemical class to economic information.

   ● From category of use to individual chemical and chemical class.

   ● Contains an index of chemicals as a direct link to economic information.

   The Kline Guide is arranged in broad sections with titles such as "Basic and Intermediate Chemicals" and "Multipurpose Additives." Each section covers a range of chemical classes (e.g., surfactants) and use categories (e.g., printing chemicals). Individual chemicals are discussed in the text and may be located through the index. Each subsection contains a description of the industry, a discussion of the important chemicals in the category, and information on price, producers, production, government regulations, and uses, including, in some cases, a breakdown of consumption by use area. The major subsections also list pertinent sources of additional information, such as trade associations, journals and directories, and there is a separate chapter covering such sources for the chemical industry in general.

7. Limitations/Difficulties:

The Kline Guide deals with the chemical industry as a whole, emphasizing segments of the industry, rather than providing specific coverage of individual chemicals. A chemical is discussed in terms of its role within a segment of the chemical industry, rather than as an individual chemical. Chemicals seem to be assigned to only one subsection and no mention is made of other uses.

8. Evaluation:

The Kline Guide is an excellent source for providing an overview of specific segments of the chemical industry. Although its emphasis is not on individual chemicals, it identifies the major use areas for a wide range of chemicals. The assessments of economic trends and status, for both the chemical industry as a whole and its subgroups, provide valuable insights and a strong foundation for more detailed work.

1. **Citation:** **Materials Handbook**. 1977.
G. S. Brady and H. R. Clauser.
McGraw-Hill Book Company. New York.

2. **Type of Source:** Handbook.

● General ○ Specific SIC: ______________________

3. **Frequency of Update or Age of Source:** Irregular.

4. **Type of Chemical Economic Information:**

● Chemical Use
  ● Function
  ● Application
○ Consumption by Use Area
○ Other
○ Price
○ Producers/Processors/Distributors
○ Production/Sales Quantity
● Physical/Chemical Properties

5. **Format/Means of Access:**

- From individual chemical and class of chemical to economic information.
- Contains an index and alphabetical arrangements of chemicals as direct link to economic information.
- The Materials Handbook is a one-volume encyclopedia intended for purchasing managers, engineers and others requiring information about the properties and uses of various materials. The main headings are arranged alphabetically, but it is necessary to use the index to find references to substances which are not main headings.

6. **Limitations/Difficulties:**

The Materials Handbook covers a wide variety of materials, not concentrating on chemicals, although a large number are included. While use is generally the only chemical economic factor discussed, the sections contain useful descriptions of the substances and general background material. Use descriptions are not highly technical, but provide a basis for more detailed, specific assessment.

Materials Handbook (Continued)

8. **Evaluation**:

The Materials Handbook is a good source of preliminary information on a large number of common chemicals. Use information from this source will provide a link to other, more specific resources necessary for the development of a complete chemical economic profile.

1. **Citation:** The Merck Index. 1977.
M. Windholz, ed. 9th Edition.
Merck and Co., Inc. Rahway, N.J.

2. **Type of Source:** Encyclopedia.

● General ○ Specific SIC: ______________________
Biomedical orientation.

3. **Frequency of Update or Age of Source:** Irregular.

4. **Type of Chemical Economic Information:**

● Chemical Use
  ● Function
  ● Application
○ Consumption by Use Area
○ Other
○ Price
○ Producers/Processors/Distributors
○ Production/Sales Quantity
● Physical/Chemical Properties

5. **Format/Means of Access:**

Access is from individual chemical to use. The Merck Index contains an index and alphabetical arrangement of chemicals as a direct link to economic information. It also contains a cross index section of the names of the drugs and chemicals discussed in the body of the work. This section links synonyms to the preferred nomenclature, and should be consulted before going to the alphabetized monographs.

6. **Limitations/Difficulties:**

The only chemical economic information available from this source concerns uses, broken down into human therapeutic, veterinary and general chemical usage. While nearly 10,000 substances are covered, the Merck Index has a heavier concentration of drugs and biological chemicals.

This source provides Chemical Abstracts names, synonyms, formulas and structures, physical data, including toxic effects, and material on chemical derivatives, as well as use information.

7. **Evaluation:**

The Merck Index is a good, easy-to-use source of chemical use information, particularly for drugs and organic chemicals. It is recommended as one of the first references to be consulted in preparing a chemical economic profile.

1. **Citation:** **Metadex (Metals Abstracts/Alloys Index).** 1966 to present.
(Alloys Index, 1974 to present.)
(American Society for Metals, Metals Park, OH.)
Available from Lockheed.

2. **Type of Source:** On-line database.

○ General ● Specific Metals SIC: Primary Metal Industry SIC 30
Misc. Chem. Products 2899

3. **Frequency of Update or Age of Source:** Monthly.

4. **Type of Chemical Economic Information:**

● Chemical Use
  ● Function
  ● Application
○ Consumption by Use Area
○ Other
○ Price
○ Producers/Processors/Distributors
○ Production/Sales Quantity
○ Physical/Chemical Properties

5. **Format/Means of Access:**

Access to chemicals is by chemical names and synonyms, British spelling, chemical classes, and uses, using a controlled vocabulary or natural language.

6. **Limitations/Difficulties:**

Complete abstracts are available on-line only since 1979.

7. **Evaluation:**

METADEX is a valuable source of use information for metals, metallic compounds and chemicals used in the metals industries. Coverage is international and includes conference papers, reviews, technical reports and books. Little economic information is included.

1. **Citation**: NTIS. National Technical Information Service. 1964 to present. (U.S. Department of Commerce. Springfield, VA.) Available from Lockheed and SDC.

2. **Type of Source**: On-line database.

   ● General ○ Specific SIC: ____________________

3. **Frequency of Update or Age of Source**: Bi-weekly.

4. **Type of Chemical Economic Information**:

   ● Chemical Use
     ● Function
     ● Application
   ○ Consumption by Use Area
   ○ Other
   ○ Price
   ○ Producers/Processors/Distributors
   ○ Production/Sales Quantity
   ○ Physical/Chemical Properties

5. **Format/Means of Access**:

   The NTIS database can be searched from systematic chemical name and synonyms, trade names, some CAS Registry numbers (if they appear in document) to use, and from assigned controlled descriptors and categories to chemicals.

6. **Limitations/Difficulties**:

   Abstracts are often descriptive, rather than informative.

   Numerous thesauri are utilized.

7. **Evaluation**:

   This is a good source of technical use data at the R & D level but it contains little economic information.

   About 5,000 chemicals per year are indexed, excluding common chemicals (personal communication, E. Lehmann, NTIS).

   It can be searched to find preexisting chemical use or economic profiles.

1. Citation: Oceanic Abstracts. 1964 to present.
(Data Courier, Inc., Louisville, KY.)
Available from Lockheed as Oceanic Abstracts;
from SDC as Oceanic.

2. Type of Source: On-line database.

○ General ● Specific SIC: N/A

3. Frequency of Update or Age of Source: Bi-monthly.

4. Type of Chemical Economic Information:

● Chemical Use
  ● Function
  ● Application
○ Consumption by Use Area
○ Other

○ Price
○ Producers/Processors/Distributors
○ Production/Sales Quantity
● Physical/Chemical Properties

5. Format/Means of Access:

Using controlled vocabulary, one can search from broad chemical class, such as hydrocarbons, to use. Metals, alloys and metallic compounds are indexed and can be searched directly. One can also search from activity to chemical.

Chemical names and synonyms can be searched in free text.

6. Limitations/Difficulties:

This source deals with marine-related material and would thus be of limited usefulness to EPA.

7. Evaluation:

This database has limited value for chemical use information. There is good coverage of marine pollution.

1. **Citation**: Oils, Detergents and Maintenance Specialties. 1967. (Vol. 2, Formulary.)
Benjamin Levitt. Chemical Publishing Co., New York.

2. **Type of Source**: Formulary.

○ General ● Specific SIC: 2841-Soaps & Other Detergents.
2842-Polishes & Sanitation Goods.

3. **Frequency of Update or Age of Source**: Not updated.

4. **Type of Chemical Economic Information**:

● Chemical Use
  ○ Function
  ● Application
○ Consumption by Use Area
● Other: Formulations.

○ Price
● Producers/Processors/Distributors
○ Production/Sales Quantity
○ Physical/Chemical Properties

5. **Format/Means of Access**:

Table of Contents includes: Aerosols, Bactericides-Fungicides-Sanitizers, Cleaners, Floor Care, Laundering & Dry Cleaning, Metal Treatment, Miscellaneous. Formulations are presented for various consumer-type products (e.g., for aerosols - oven cleaners, insecticides, etc.). Many of the constituents are given as brand names with suppliers. The addresses of the suppliers are given as an appendix.

The index includes applications as well as individual chemicals (by brand name).

6. **Limitations/Difficulties**:

Chemicals are only accessible by trade name; generic equivalents are not provided.

7. **Evaluation**:

This is a good source of brand name chemicals for the above applications. It is also a good source of applications, given the brand name of a chemical. Contact must be made with chemical manufacturer to determine specific or generic chemical name, if no other source relates trade names with chemical name. (e.g., McCutcheon's Detergent's (look up actual name) or Chemical Synonyms & Trade Names, Wm. Gardner, Ed.)

1. Citation: OPD Chemical Buyers' Directory.
Chemical Marketing Reporter.
Schnell Publishing Co., New York. Annual.

2. Type of Source: Buyers' guide.

● General ○ Specific SIC: ____________________

3. Frequency of Update or Age of Source: Annual.

4. Type of Chemical Economic Information:

○ Chemical Use	○ Price
○ Function	● Producers/Processors/Distributors
○ Application	○ Production/Sales Quantity
○ Consumption by Use Area	○ Physical/Chemical Properties
○ Other	

5. Format/Means of Access:

Access is from individual chemical to economic information. This directory contains an alphabetical arrangement of chemicals as a direct link to economic information.

Since there is no cross-referencing, a chemical may be listed under several synonyms.

6. Limitations/Difficulties:

This source provides information only on the producers, processors and distributors of a given chemical.

7. Evaluation:

The OPD Buyers' Guide is useful primarily for identification of chemical suppliers. Information of this nature may often be a key to additional economic data, through knowledge of the chemical industry and contact with the companies.

1. Citation: Organic Chemical Producers' Data Base (OCPDB). 1976 - present. (Prepared for the Environmental Protection Agency, Cincinnati, OH by the Radian Corporation, Austin, Texas.)

2. Type of Source: On-line in-house database.

● General ○ Specific SIC: ____________________
Organic Chemicals.

3. Frequency of Update or Age of Source: Irregular.

4. Type of Chemical Economic Information:

● Chemical Use	● Price
● Function	● Producers/Processors/Distributors
● Application	● Production/Sales Quantity
○ Consumption by Use Area	● Physical/Chemical Properties
● Other: CAS number, synonyms.	

5. Format/Means of Access:

This database can be searched by chemical name and synonyms or CAS number to obtain use and chemical economic information. It can also be searched from use to chemical.

6. Limitations/Difficulties:

7. Evaluation:

OCPDB is a primary source of use and chemical economic data for over 600 organic chemicals produced in the United States. It should be among the first information sources consulted.

1. Citation: PAPERCHEM. July 1969 to present.
(Institute of Paper Chemistry. Appleton, Wisconsin.)
Available from SDC.

2. Type of Source: On-line database.

○ General ● Specific SIC: 26 Paper and Allied Products.

3. Frequency of Update or Age of Source: Monthly.

4. Type of Chemical Economic Information:

● Chemical Use
  ● Function
  ● Application
○ Consumption by Use Area
○ Other
○ Price
○ Producers/Processors/Distributors
○ Production/Sales Quantity
○ Physical/Chemical Properties

5. Format/Means of Access:

PAPERCHEM can be searched from chemical name, synonyms, trade name, and chemical class to use and from use to chemical name or chemical class.

6. Limitations/Difficulties:

7. Evaluation:

PAPERCHEM is a fine source primarily of use information for chemicals of the pulp-, paper-, and board-manufacturing and consuming industries.

It provides abstracts of worldwide scientific and technical periodicals, patent gazettes of six major countries, symposium proceedings and some secondary sources.

This database corresponds to the printed publication "Abstract Bulletin of the Institute of Paper Chemistry".

1. **Citation:** P/E News. (Petroleum/Energy News.) 1975 to present. (American Petroleum Institute. New York, N.Y.) Available from SDC.

2. **Type of Source:** On-line database.

   ○ General ● Specific SIC: 29.
   Petroleum and Energy.

3. **Frequency of Update or Age of Source:** Weekly.

4. **Type of Chemical Economic Information:**

● Chemical Use

  ● Function

  ● Application

○ Consumption by Use Area

● Price

● Producers/Processors/Distributors

● Production/Sales Quantity

○ Physical/Chemical Properties

● Other: Export and import levels.

5. **Format/Means of Access:**

This index can be searched from chemical name or chemical class to use and from use to chemical.

6. **Limitations/Difficulties:**

Unit record is a citation and index terms. One must consult original document to determine relevance and obtain complete data.

Use terms are not always linked to chemical searched.

7. **Evaluation:**

This petroleum and energy business news index is a valuable source of international economic references to petrochemicals. However, one must obtain the original document for hard data.

1. Citation: Petroleum Facts & Figures. 1971 Edition.
American Petroleum Institute. Washington, D.C.

2. Type of Source: Statistical report by API.

○ General ● Specific SIC: 291 - Petroleum Refining.

3. Frequency of Update or Age of Source: Annual publication.

4. Type of Chemical Economic Information:

○ Chemical Use
  ○ Function
  ○ Application
○ Consumption by Use Area
○ Other

● Price
● Producers/Processors/Distributors
● Production/Sales Quantity
○ Physical/Chemical Properties

5. Format/Means of Access:

This book is accessed through the Table of Contents for each section as well as the index. Data is presented on the quantity of petroleum production, petroleum refinery runs and refined petroleum products.

6. Limitations/Difficulties:

Use of statistics are given for only fuels, asphalts and tars.

7. Evaluation:

This is a good source if looking for statistics on production by petroleum refineries. It is not useful as a source of information on chemicals used in the production and refining of petroleum products. It can be useful in determining total amounts of such chemicals if technical or formulation data are available.

1. **Citation**: PIRA. 1975 to present.
(The Research Association for the Paper and Board, Printing and Packaging Industries. Surrey, England.)
Available from Lockheed.

2. **Type of Source**: On-line database.

○ General ● Specific SIC: 26 Paper and Allied Products.

3. **Frequency of Update or Age of Source**: Monthly.

4. **Type of Chemical Economic Information**:

● Chemical Use
● Function
● Application
○ Consumption by Use Area
○ Other
● Price
○ Producers/Processors/Distributors
● Production/Sales Quantity
○ Physical/Chemical Properties

5. **Format/Means of Access**:

Chemical names or synonyms, British spellings, chemical classes, and uses are searchable using natural language.

6. **Limitations/Difficulties**:

There is no controlled vocabulary.

Information is not always linked to chemical of interest.

7. **Evaluation**:

PIRA is a good source of use information from the world literature for chemicals used in the paper, printing and packaging industries. It also provides some economic data.

The on-line records in the PIRA database are taken from the following PIRA publications: Paper and Board Abstracts, Printing Abstracts, Packaging Abstracts and Management and Marketing Abstracts.

1. **Citation:** Plasticizer Guidebook and Directory. 1972.
Noyes Data Corp. Park Ridge, N.J.

2. **Type of Source:** Directory.

○ General ● Specific SIC: ______________________
Plasticizers

3. **Frequency of Update or Age of Source:** Out of print.

4. **Type of Chemical Economic Information:**

● Chemical Use
  ○ Function
  ● Application
○ Consumption by Use Area
○ Other

○ Price
● Producers/Processors/Distributors
○ Production/Sales Quantity
● Physical/Chemical Properties

5. **Format/Means of Access:**

This book is an alphabetical listing of manufacturers, trade names of plasticizers produced, physical properties and suggested applications.

6. **Limitations/Difficulties:**

This source has no index. The plasticizers are identified only by trade name.

7. **Evaluation:**

This is a poor source of chemical use/economic information. There is no means of searching for specific chemicals, or of searching from use to chemical. It is essentially a list of the trade name plasticizers produced by various companies.

1. **Citation**: **Plastics Industry Analysis**. 1979.
Prepared for the Environmental Protection Agency
by the Radian Corporation, Austin, Texas.

2. **Type of Source**: Report.

○ General ● Specific SIC: 282
Plastics

3. **Frequency of Update or Age of Source**: None; report completed.

4. **Type of Chemical Economic Information**:

● Chemical Use
  ● Function
  ● Application
● Consumption by Use Area
○ Other

○ Price
○ Producers/Processors/Distributors
● Production/Sales Quantity
○ Physical/Chemical Properties

5. **Format/Means of Access**:

Thirty key polymers are arranged alphabetically in tabular form along with their annual production volume and sales value.

Chemical use diagrams are presented for the monomeric or starting materials used in the production of the thirty polymers.

6. **Limitations/Difficulties**:

There is no general, alphabetical index of the chemicals presented in the report.

7. **Evaluation**:

This is a valuable source of chemical economic information for a number of key polymers of the plastics industry as well as their monomeric components.

1. **Citation**: Pollution Abstracts. 1970 to present.
(Data Courier Inc. Louisville, KY.)
Available from Lockheed as Pollution Abstracts;
from SDC as Pollution.

2. **Type of Source**: On-line database.

● General o Specific SIC: ____________________

3. **Frequency of Update or Age of Source**: Bi-monthly.

4. **Type of Chemical Economic Information**:

● Chemical Use
  ● Function
  ● Application
o Consumption by Use Area
o Other

o Price
o Producers/Processors/Distributors
o Production/Sales Quantity
o Physical/Chemical Properties

5. **Format/Means of Access**:

In the controlled vocabulary, one can search by chemical class, trade names or common names, some well-known chemical compounds, or elements and their compounds to obtain useful information.

This database can also be searched from use to chemical.

6. **Limitations/Difficulties**:

No controlled chemical vocabulary.

7. **Evaluation**:

This is primarily an environmental database. Use information can often be derived indirectly from a chemical's effect on the environment.

In addition to journals, coverage includes books, conferences, directories, glossaries and historical and literature reviews.

1. **Citation:** Predicats' Funk & Scott Indexes. 1972 - present.
(Predicasts, Inc., Cleveland, OH.)
Available from Lockheed.

2. **Type of Source:** On-line database.

● General ○ Specific SIC: ______________________

3. **Frequency of Update or Age of Source:** Monthly.

4. **Type of Chemical Economic Information:**

● Chemical Use
  ● Function
  ● Application
○ Consumption by Use Area
○ Other
● Price
● Producers/Processors/Distributors
● Production/Sales Quantity
○ Physical/Chemical Properties

5. **Format/Means of Access:**

This index can be searched by Product Code (SIC Code), trade name, controlled chemical name, Event Code (e.g., use of materials), and natural language.

6. **Limitations/Difficulties:**

Information appears as annotations; one must consult the original document for numerical data.

7. **Evaluation:**

This index provides valuable chemical use and economic information.

While the annotations generated by a search are usually sufficient for chemical use, the original document must be consulted for complete economic information.

1. **Citation**: **Predicasts' International Forecasts.**
(Predicasts, Inc., Cleveland, OH.)
Available from Lockheed only. SDC plans to offer it in the near future.

2. **Type of Source**: On-line database.

● General ○ Specific SIC: ______________________________

3. **Frequency of Update or Age of Source**: Monthly.

4. **Type of Chemical Economic Information**:

● Chemical Use
  ● Function
  ● Application
○ Consumption by Use Area
● Other: Measure name
  Growth rate

● Price
○ Producers/Processors/Distributors
● Production/Sales Quantity
○ Physical/Chemical Properties

5. **Format/Means of Access**:

Abstracts can be searched by Product Code (SIC Code) trade name, controlled chemical name, Event Code (e.g., use of materials), Measure Name (used for statistical account of products and events) and natural language.

6. **Limitations/Difficulties**:

This source does not include United States data.

7. **Evaluation**:

This source contains use data and statistics for current and future production and consumption, sales and price.

It covers all the countries of the world except the United States.

1. Citation: Predicasts' International Time Series. 1972 - present. (Predicasts, Inc., Cleveland, OH.) Available from Lockheed only; SDC plans to offer it in the near future.

2. Type of Source: On-line database.

● General o Specific SIC: ____________________

3. Frequency of Update or Age of Source: Quarterly.

4. Type of Chemical Economic Information:

● Chemical Use
  ● Function
  ● Application
● Consumption by Use Area
o Other

● Price
● Producers/Processors/Distributors
● Production/Sales Quantity
o Physical/Chemical Properties

5. Format/Means of Access:

Data can be searched by Product Code (SIC Code), trade name, controlled chemical vocabulary, Event Code (e.g., use of materials), and natural language.

6. Limitations/Difficulties:

This source can be used only for major materials. It would not provide economic information on a new chemical or one with limited usage.

7. Evaluation:

Includes historical data from 1957 and projected published forecasts through 1990 for 50 major countries of the world (excluding the U.S.).

Largely an economic information source for widely-used materials or products. Only major use data is covered.

1. Citation: Predicasts' PROMT. 1972 - present.
(Predicasts, Inc., Cleveland, OH.)
Available from SDC as PROMT and from Lockheed as
PTS PROMT and PTS Predalert.

2. Type of Source: On-line database.

● General ○ Specific SIC: ____________________

3. Frequency of Update or Age of Source: Monthly.

4. Type of Chemical Economic Information:

● Chemical Use
  ● Function
  ● Application
● Consumption by Use Area
○ Other
● Price
● Producers/Processors/Distributors
● Production/Sales Quantity
○ Physical/Chemical Properties

5. Format/Means of Access:

Abstracts can be searched by Product Code(s) (SIC Codes), Trade name(s), controlled vocabulary chemical names and chemical classes, Event Code(s) (e.g., use of materials), and natural language.

6. Limitations/Difficulties:

When using natural language, information is not always linked to chemical searched.

7. Evaluation:

These on-line abstracts are a prime source of chemical economic information. They also contain uses for intermediate products of the chemical searched, such as in the fibers, food, metals, paper and plastics industries.

The thesaurus with its product names and event codes provides easy access to this database.

1. **Citation:** Predicasts' U.S. Forecasts. July 1971 - present.
(Predicasts, Inc., Cleveland, OH.)

2. **Type of Source:** On-line database.

● General ○ Specific SIC: ______________________

3. **Frequency of Update or Age of Source:** Quarterly.

4. **Type of Chemical Economic Information:**

- ● Chemical Use
  - ● Function
  - ● Application
- ● Consumption by Use Area
- ● Other - Growth Rate (%)
- ● Price
- ○ Producers/Processors/Distributors
- ● Production/Sales Quantity
- ○ Physical/Chemical Properties

5. **Format/Means of Access:**

Abstracts can be searched by Product Code (SIC Code), trade name, controlled chemical name, Event Code (e.g., use of materials), Measure Name (used for statistical accounting of products and events) and natural language.

6. **Limitations/Difficulties:**

When natural language is used, information is not always linked to chemical searched.

7. **Evaluation:**

This is a good source of use data. It provides statistics for current and future production and consumption volumes, sales and price.

1. Citation: Predicasts' U.S. Time Series. July 1971 - present. (Predicasts, Inc., Cleveland, OH.) Available from Lockheed only; SDC plans to offer it in the near future.

2. Type of Source: On-line database.

   ● General ○ Specific SIC: ____________________

3. Frequency of Update or Age of Source: Monthly.

4. Type of Chemical Economic Information:

   ● Chemical Use
      ● Function
      ● Application
   ● Consumption by Use Area
   ○ Other
   ● Price
   ● Producers/Processors/Distributors
   ● Production/Sales Quantity
   ○ Physical/Chemical Properties

5. Format/Means of Access:

   Data can be searched by Product Code (SIC Code), trade name, controlled chemical vocabulary, Event Code (e.g., use of materials), and natural language.

6. Limitations/Difficulties:

   Only major materials are covered. This source would not provide economic information on a rare chemical or one with limited usage.

7. Evaluation:

   Contains historical data from 1957 and projected forecasts through 1990. Largely an economic information source for widely-used materials or products. Only general, major use data is included.

1. Citation: Printing Inks. Developments Since 1975. 1979.
J. I. Duffy.
Noyes Data Corp., Fairfield, N.J.

2. Type of Source: Patent collection.

○ General ● Specific SIC: 2893-Printing Inks.

3. Frequency of Update or Age of Source: Developments since 1975.

4. Type of Chemical Economic Information:

- ● Chemical Use
  - ● Function
  - ○ Application
- ○ Consumption by Use Area
- ○ Other
- ○ Price
- ○ Producers/Processors/Distributors
- ○ Production/Sales Quantity
- ○ Physical/Chemical Properties

5. Format/Means of Access:

This is a good list of recently developed inks and other printing chemicals. The text is entirely made up of patents. The papers are arranged according to application and functional areas (e.g., flexographic inks, binder resins, additives for conventional printing inks, pigments and dyestuffs, textile printing).

6. Limitations/Difficulties:

There is no index. Access is from function or application to chemical.

7. Evaluation:

This book shows recent developments in the printing ink field. Because it is arranged by use, with no index, individual chemicals are difficult to search. It is valuable for identifying chemicals and chemical classes having a given function.

1. **Citation:** **RAPRA Abstracts**. 1972 to present.
(Rubber and Plastics Research Association of Great Britain. Shawbury, Shrewsbury, Shropshire, England.)
Available from Lockheed.

2. **Type of Source:** On-line database.

○ General ● Specific SIC: 282 Plastic Materials and Rubber Synthetics.

3. **Frequency of Update or Age of Source:** Monthly.

4. **Type of Chemical Economic Information:**

● Chemical Use
  ● Function
  ● Application
● Consumption by Use Area
○ Other

● Price
○ Producers/Processors/Distributors
● Production/Sales Quantity
○ Physical/Chemical Properties

5. **Format/Means of Access:**

RAPRA may be searched from chemical name and synonyms with British spellings, trade name, chemical class, controlled descriptors and natural language to use and economic information.

6. **Limitations/Difficulties:**

As with other databases, data are not always linked to chemical searched.

7. **Evaluation:**

This is a good source of use and economic information for chemicals used or produced by the rubber and plastics industries. It has patent information as well.

1. Citation: A Study of Industrial Data on Candidate Chemicals for Testing, 1977.
SRI International. NTIS PB 274-264.
U.S. Environmental Protection Agency, Washington, D.C.

2. Type of Source: Government report.

● General o Specific SIC: ______________________

3. Frequency of Update or Age of Source: None; final report published.

4. Type of Chemical Economic Information:

- ● Chemical Use
  - o Function
  - o Application
- ● Consumption by Use Area
- ● Other: Imports, exports.
- ● Price
- o Producers/Processors/Distributors
- ● Production/Sales Quantity
- o Physical/Chemical Properties

5. Format/Means of Access:

This report provides economic and use information on 667 organic chemicals with annual sales volume of 1 million lbs. or more. For these chemicals, listed in descending order of production volumes, information is provided on production volume, data source and estimated environmental release potential. Access to the chemicals is random.

Data on production volume for 1791 chemicals is provided in a second section. In this section, the chemicals are arranged in 26 classes by structure. Tables list chemical name, CAS number, production volume, price, market value, data source and year. No price or market value data are provided for chemicals with sales volume between 1 million and 1000 lbs; under 1000 lbs. production, only CAS number and name are given.

More detailed economic and use information, including consumption patterns, major and potential uses, are given for 109 chemicals with over 1 million pounds annual production. Access to these is through an alphabetical index. Access to other chemicals is random.

6. **Limitations/Difficulties:**

Accessing the desired chemical poses the greatest difficulty with using this source. The amount of data available increases with increasing production volume. Almost no information is provided for smaller volume chemicals (i.e., under 1,000 lbs./year), but for high-volume chemicals (for which information is readily available in many sources), full market profiles are presented. For those chemicals without production volume listings in USITC'S Synthetic Organic Chemicals, SRI has estimated figures. These estimates are valuable for chemicals with little published data.

Only organic chemicals are covered in the report.

The physical format of the report may pose problems. Some of the tables are reproductions of computer print-outs and may be illegible in places.

7. **Evaluation:**

This source is a compilation of existing data that is, for the most part, available from other sources. There is almost no information not obtainable elsewhere.

This report is most useful for the 109 chemicals having market forecasts. Also of particular interest are the SRI estimates of production volumes where no published figures are available.

1. **Citation:** Surface Coatings Abstracts (SCA). 1976 to present.
(Paint Research Association of Great Britain.
Middlesex, England.)
Available from Lockheed.

2. **Type of Source:** On-line database.

○ General ● Specific SIC: 285 Paints and Allied Products.

3. **Frequency of Update or Age of Source:** Monthly.

4. **Type of Chemical Economic Information:**

● Chemical Use ● Price

  ● Function ● Producers/Processors/Distributors

  ● Application ● Production/Sales Quantity

● Consumption by Use Area ○ Physical/Chemical Properties

○ Other

5. **Format/Means of Access:**

SCA can be searched by chemical name and synonyms, trade name, or chemical class to use. It is also searchable by activity and through natural language to chemical.

6. **Limitations/Difficulties:**

No controlled vocabulary.

Some economic abstracts are descriptive rather than informative.

7. **Evaluation:**

SCA contains use, statistical and economic information on paints, varnishes, lacquers, component pigments, printing inks, adhesives, dyestuffs, fire retardants, resins, solvents and plasticizers. Patents, a good source of information, are included.

1. Citation: Synthetic Organic Chemicals: United States Production and Sales.
United States International Trade Commission.
Washington, D.C.

2. Type of Source: Government statistical report.

● General o Specific SIC: ______________
Organic chemicals only.

3. Frequency of Update or Age of Source: Annual. Final figures for the year are generally released in the fall of the following year; preliminary data is available earlier.

4. Type of Chemical Economic Information:

- o Chemical Use
  - o Function
  - o Application
- ● Consumption by Use Area
- o Other
- ● Price
- ● Producers/Processors/Distributors
- ● Production/Sales Quantity
- o Physical/Chemical Properties

5. Format/Means of Access:

- ● From category of use to individual chemical.

- ● This source has no index or other alphabetical arrangement of chemicals. It is organized into 15 sections, according to use. Among the categories are Medicinal Chemicals, Surface Active Agents, and Dyes. Each section contains a narrative summary and three tables. The first table lists sales and production volumes and prices for the leading chemicals of the section. The data is reported by the manufacturers and is published for those chemicals having three or more producers and a production/sales volume of 5,000 lbs. or sales value of $5,000 or more (for most categories). The second table lists all chemicals for which production/sales data has been reported, along with manufacturer codes. The third table lists manufacturer names and codes. An appendix provides company addresses.

  Chemicals are listed alphabetically within each section, sometimes with subdivisions by chemical class. To locate a specific chemical, it is necessary to choose the appropriate section of the book. Advantageous initial choices are the sections on Cyclic Intermediates and Miscellaneous Chemicals. There is no index relating individual chemicals to sections. Occasionally a chemical may appear in more than one section.

6. **Limitations/Difficulties:**

Sometimes chemical use can be inferred, based on the section of the book in which a particular chemical is listed.

There is usually a time lag of nearly a year before final annual statistics are published; preliminary figures are released earlier but those are for a limited number of chemicals in all categories.

7. **Evaluation:**

This is the official government publication of organic chemical production and sales statistics. Figures in other sources are often based on this publication. For those chemicals having production and sales data listed, this is an excellent information source. It is also a reliable source of manufacturer identification. Although lack of an index makes it difficult for the inexperienced user to locate information, this should be one of the first sources consulted.

1. Citation: Toxicology Data Bank, TDB.
(National Library of Medicine.)

2. Type of Source: On-line database.

● General o Specific SIC: ______________________

3. Frequency of Update or Age of Source: Quarterly.

4. Type of Chemical Economic Information:

● Chemical Use
    ● Function
    o Application
● Consumption by Use Area
● Other: Import, Export information,
Synonyms.

o Price
● Producers/Processors/Distributors
● Production/Sales Quantity
● Physical/Chemical Properties

5. Format/Means of Access:

Direct access to hard data on chemical use and chemical economic information is obtained by searching chemical name, CAS Registry Number, molecular formula and/or synonyms. Major uses, consumption pattern, U.S. production, imports, and exports are data elements in the TDB system.

6. Limitations/Difficulties:

Only major uses are included. It does not cover price or sales volume. Sources are not primary; material is taken from other secondary reference sources such as the Merck Index.

7. Evaluation:

This is an excellent source of chemical economic information for more than 2600 chemical substances. Should be among the first on-line databases searched for such information. It saves the time of looking at several secondary sources which are covered.

1. **Citation:** Tulsa. 1965 to present.
(University of Tulsa. Tulsa, Oklahoma.)
Available from SDC.

2. **Type of Source:** On-line database.

○ General ● Specific SIC: 29 Petroleum.

3. **Frequency of Update or Age of Source:** Monthly.

4. **Type of Chemical Economic Information:**

● Chemical Use
  ● Function
  ● Application
○ Consumption by Use Area
○ Other

● Price
● Producers/Processors/Distributors
● Production/Sales Quantity
○ Physical/Chemical Properties

5. **Format/Means of Access:**

TULSA can be searched from chemical name, synonyms, trade name, chemical class to use and from use to chemical name and chemical class.

6. **Limitations/Difficulties:**

Search product is the citation plus controlled, assigned vocabulary. It may be necessary to consult original documents to correlate use to chemical searched.

7. **Evaluation:**

This is a worthwhile source of use and economic information for petrochemicals. It provides worldwide coverage of literature and patents and includes such subject areas as ecology and pollution and alternative fuel and energy sources.

This database corresponds to the printed publication, "Petroleum Abstracts."

1. **Citation**: U.S. Exports.
(U.S. Department of Commerce. Washington, D.C.)
Available from Lockheed.

2. **Type of Source**: On-line database.

● General ○ Specific SIC: ______________________

3. **Frequency of Update or Age of Source**: Annual.

4. **Type of Chemical Economic Information**:

○ Chemical Use	● Price
○ Function	● Producers/Processors/Distributors
○ Application	● Production/Sales Quantity
○ Consumption by Use Area	○ Physical/Chemical Properties
● Other: Exports.	

5. **Format/Means of Access**:

Access to U.S. Exports is by chemical name, synonyms, chemical class, trade name or chemical industry to economic data.

6. **Limitations/Difficulties**:

Access is restricted to U.S. passwords only.

7. **Evaluation**:

This is a good source of sales and export statistics for government and non-government shippers. However, access is limited to U.S. passwords only.

1. **Citation:** *U.S. Imports for Consumption and General Imports.*
(Report FT 246.) U.S. Bureau of the Census.
U.S. Government Printing Office. Washington, D.C.
Published annually.

2. **Type of Source:** Government statistical report.

● General ○ Specific SIC: ____________________

3. **Frequency of Update or Age of Source:** Annual.

4. **Type of Chemical Economic Information:**

○ Chemical Use
  ○ Function
  ○ Application
○ Consumption by Use Area
● Other: Import volume
○ Price
○ Producers/Processors/Distributors
○ Production/Sales Quantity
○ Physical/Chemical Properties

5. **Format/Means of Access:**

From individual chemical to economic information. Contains index of chemicals as direct link to economic information. This source is arranged by TSUSA classification numbers, which must be obtained from a separate publication, Tariff Schedules of the United States Annotated.

6. **Limitations/Difficulties:**

Chemicals and Related Products is a major section of the Tariff Schedules. Chemicals are arranged randomly within the section and must be accessed through a separate index.

7. **Evaluation:**

This is the official government publication of import statistics, and is a valuable source of this information.

1. **Citation:** Uses and Applications of Chemicals and Related Materials. 1944.
Vol. II. Thomas C. Gregory.
Reinhold Publishing Corp., N.Y.

2. **Type of Source:** Book.

● General ○ Specific SIC: ______________________

3. **Frequency of Update or Age of Source:** Out of print.

4. **Type of Chemical Economic Information:**

- ● Chemical Use
  - ○ Function
  - ● Application
- ○ Consumption by Use Area
- ○ Other
- ○ Price
- ○ Producers/Processors/Distributors
- ○ Production/Sales Quantity
- ○ Physical/Chemical Properties

5. **Format/Means of Access:**

This book begins with an index of uses, an alphabetical listing of applications with the pages in Volume I or II where the relevant chemicals can be found.

The second part is an alphabetical listing of chemicals with their uses.

A third section is a numerical list of U.S. Patents with the volume and page where the chemical will be found.

The last section is an alphabetical list of patent holders and their addresses.

6. **Limitations/Difficulties:**

This source is over 35 years old and out of print. No trade names are used, nor are statistics or formulations presented.

7. **Evaluation:**

This is a good source for searching from applications to chemical or chemical to application. Because of the age of this book, the material in it should be used with discretion and verified in other sources, if possible.

1. **Citation**: World Textiles. 1970 to present.
(Shirley Institute. Manchester, England.)
Available from Lockheed.

2. **Type of Source**: On-line database.

o General ● Specific SIC:
Textile Industry.

Synthetic Fibers 2823
2824

Textile Processing
Assistants 2843

3. **Frequency of Update or Age of Source**: Monthly.

4. **Type of Chemical Economic Information**:

● Chemical Use
  ● Function
  ● Application
● Consumption by Use Area
o Other
● Price
o Producers/Processors/Distributors
● Production/Sales Quantity
o Physical/Chemical Properties

5. **Format/Means of Access**:

The database may be accessed by chemical name and synonyms, British spellings, chemical classes, use and natural language. It has a controlled vocabulary of key terms.

6. **Limitations/Difficulties**:

World Textiles provides citations only; it is often necessary to examine the original document in order to determine relevance.

7. **Evaluation**:

This index is a valuable secondary source of use information for chemicals, especially polymers, used in the textile industry.

It also covers production, consumption and international trade data.

Patents are included.

APPENDIX B.

INFORMATION SOURCES INDEXED BY PHYSICAL TYPE

1. **Books**

    Batteries
    Batteries and Energy Systems
    Chemical Origins and Markets
    Domestic and Industrial Chemical Specialties
    Dry Strength Additives
    Uses and Applications of Chemicals and Related Materials

2. **Buyers' Guides, Catalogues and Directories**

    Adhesives: Guidebook and Directory
    Adhesives Redbook
    Books In Print
    Chemical Materials Catalog
    Chem Sources, USA
    Chemical Trade Names and Commercial Synonyms
    Chemical Week Buyers' Guide Issue
    Colour Index
    Commercial Names and Sources
    OPD Chemical Buyers' Directory
    Plasticizers. Guidebook and Directory

3. **Dictionaries**

    Chemical Dictionary Files On-line
    CHEMSIS
    CLAIMS/Class
    Chemical Synonyms and Trade Names
    The Condensed Chemical Dictionary
    Dictionary of Commercial Chemicals
    Hackh's Chemical Dictionary

4. **Encyclopedias**

    Encyclopedia of Associations. Vol. 1. National Organizations of the United States
    Encyclopedia of Chemistry
    Encyclopedia of Surface-Active Agents
    Kirk-Othmer Encyclopedia of Chemical Technology
    The Merck Index

5. **Formularies**

    Fire Retardants Formulations
    Oils, Detergents and Maintenance Specialties (Vol. 2, Formulary)

APPENDIX B.

INFORMATION SOURCES INDEXED BY PHYSICAL TYPE (Cont.)

6. Handbooks

Chemical Economics Handbook
Chemical Specialties
Commercial Organic Flocculants
Elastomeric Materials
Faith, Keyes and Clark's Industrial Chemicals
Foams
Handbook of Adhesives
Handbook of Cosmetic Materials
Handbook of Materials and Processes for Electronics
Handbook of Water-Soluble Gums and Resins
Industrial Solvents Handbook
The Kline Guide to the Chemical Industry
Materials Handbook

7. On-Line Databases

ABI/Inform
American Statistics Index, ASI
APILIT (American Petroleum Institute refining literature)
APIPAT (American Petroleum Institute refining patents)
Biological Abstracts On-Line (includes Biosis, Biosis Previews)
Biosis (see "Biological Abstracts On-Line")
Biosis Previews (see "Biological Abstracts On-Line")
Chemical Abstracts On-Line (includes CA Search, CAS 77)
Chemdex (see "Chemical Dictionary Files On-Line")
Chemical Dictionary Files On-Line (includes Chemline, Chemname, Chemsearch)
Chemline (see "Chemical Dictionary Files On-Line)
Chemname (see "Chemical Dictionary Files On-Line)
Chemsearch (see "Chemical Dictionary Files On-Line)
Chemical Industry Notes
Chemical Monograph Referral Center (CHEMRIC)
Chemicals in Commerce Information System (CICIS)
CHEMSIS
CLAIMS/Chem
CLAIMS/Chem/Uniterm
CLAIMS/Class
CLAIMS/U.S. Patent Abstracts, CLAIMS/U.S. Patent Abstracts Weekly
CLAIMS/U.S. Patents, 1971-77
Compendex
Conference Papers Index
Economics Abstracts International
Environmental Chemicals Data and Information Network (ECDIN)
Food, Science and Technology Abstracts, FSTA
ISMEC (Information Service in Mechanical Engineering)
Metadex (Metals Abstracts/Alloys Index)

APPENDIX B.

INFORMATION SOURCES INDEXED BY PHYSICAL TYPE (Cont.)

7. On-Line Databases (Cont.)

NTIS (National Technical Information Service)
Oceanic Abstracts
Organic Chemical Producers' Database (OCPDB)
P/E News (Petroleum/Energy News)
PAPERCHEM
PIRA (Paper, Printing, Packaging Industries Research Association)
Pollution Abstracts
Predicasts' Funk and Scott Indexes
Predicasts' International Forecasts
Predicasts' International Time Series
Predicasts' PROMT
Predicasts' U.S. Forecasts
Predicasts' U.S. Time Series
RAPRA Abstracts (Rubber and Plastics Research Association)
Surface Coating Abstracts
Toxicology Data Bank (TDB)
Tulsa
U.S. Exports
World Textiles

8. Patent Collections

Dry Cell Batteries: Chemistry and Design
Printing Inks. Developments since 1975.

9. Periodicals

Chemical Profiles. Chemical Marketing Reporter
Chemical Week

10. Reports (Includes Statistical Reports)

Commercially Available Chemical Agents for Paper and Board Manufacturers
Fert Flash
The Fertilizer Index
Imports of Benzenoid Chemicals. U.S. International Trade Commission
Petroleum Facts and Figures
Plastics Industry Analysis
A Study of Industrial Data on Candidate Chemicals for Testing
Synthetic Organic Chemicals: United States Production and Sales
U.S. Imports for Consumption and General Imports (Report FT 246)

APPENDIX C.

SOURCES CONTAINING INFORMATION ON CHEMICAL USE (FUNCTION)

ABI Inform
Adhesives: Guidebooks and Directory
Adhesives Redbook
APIPAT (American Petroleum Institute refining patents)
Batteries
Batteries and Energy Systems
Biological Abstracts On-line
Chemical Abstracts On-line
Chemical Economics Handbook
Chemical Industry Notes
Chemical Materials Catalog
Chemical Monograph Referral Center (CHEMRIC)
Chemical Profiles, Chemical Marketing Reporter
Chemical Trade Names and Commercial Synonyms
Chemical Week
Chemical Week Buyers' Guide Issue
CLAIMS/Chem
CLAIMS/Chem/Uniterm
CLAIMS/U.S. Patent Abstracts, CLAIMS/U.S. Patent Abstracts Weekly
CLAIMS/U.S. Patents
Colour Index
Commercial Names and Sources
Compendex
The Condensed Chemical Dictionary
Conference Papers Index
Dictionary of Commercial Chemicals
Domestic and Industrial Chemical Specialties
Dry Cell Batteries: Chemistry and Design
Elastomeric Materials
Encyclopedia of Chemistry
Environmental Chemicals Data and Information Network (ECDIN)
Foams
Food, Science and Technology Abstracts, FSTA
Handbook of Adhesives
Handbook of Cosmetic Materials
Handbook of Materials and Processes for Electronics
Handbook of Water-Soluble Gums and Resins
Imports of Benzenoid Chemicals. U.S. International Trade Commission
ISMEC (Information Service in Mechanical Engineering)
Kirk-Othmer Encyclopedia of Chemical Technology
The Kline Guide to the Chemical Industry
Materials Handbook
The Merck Index
Metadex (Metals Abstracts/Alloys Index)
NTIS (National Technical Information Service)
Oceanic Abstracts

APPENDIX C.

SOURCES CONTAINING INFORMATION ON CHEMICAL USE (FUNCTION) (Contd.)

Organic Chemical Producers' Database (OCPDB)
P/E News (Petroleum/Energy News)
PAPER CHEM
PIRA (Paper, Printing, Packaging Industries Research Association)
Plastics Industry Analysis
Pollution Abstracts
Predicasts' Funk and Scott Indexes
Predicasts' International Forecasts
Predicasts' International Time Series
Predicasts' PROMT
Predicasts' U.S. Forecasts
Predicasts' U.S. Time Series
Printing Inks. Developments since 1975
RAPRA Abstracts (Rubber and Plastics Research Association)
A Study of Industrial Data on Candidate Chemicals for Testing
Surface Coatings Abstracts
Synthetic Organic Chemicals: United States Production and Sales
Toxicology Data Bank, (TDB)
Tulsa
World Textiles

APPENDIX D.

SOURCES CONTAINING INFORMATION ON CHEMICAL USE (APPLICATION)

ABI Inform
Adhesives: Guidebook and Directory
Adhesives Redbook
APIPAT (American Petroleum Institute refining patents)
Batteries and Energy Systems
Biological Abstracts On-line
Chem Sources, USA
Chemical Abstracts On-line
Chemical Economics Handbook
Chemical Industry Notes
Chemical Specialties
Chemical Synonyms and Trade Names
Chemical Week
CLAIMS/Chem
CLAIMS/Chem/Uniterm
CLAIMS/U.S. Patent Abstracts, CLAIMS/U.S. Patent Abstracts Weekly
CLAIMS/U.S. Patents
Colour Index
Commercial Organic Flocculants
Commercially Available Chemical Agents for Paper and Board Manufacturers
Compendex
The Condensed Chemical Dictionary
Conference Papers Index
Dictionary of Commercial Chemicals
Domestic and Industrial Chemical Specialties
Dry Strength Additives
Elastomeric Materials
Encyclopedia of Chemistry
Encyclopedia of Surface-Active Agents
Environmental Chemical Data and Information Network (ECDIN)
Faith, Keyes and Clark's Industrial Chemicals
Fire Retardants Formulations
Foams
Food, Science and Technology Abstracts, FSTA
Hackh's Chemical Dictionary
Handbook of Adhesives
Handbook of Cosmetic Materials
Handbook of Materials and Processes for Electronics
Handbook of Water-Soluble Gums and Resins
ISMEC (Information Service in Mechanical Engineering)
Kirk-Othmer Encyclopedia of Chemical Technology
The Kline Guide to the Chemical Industry
Materials Handbook
The Merck Index
Metadex (Metals Abstracts/Alloys Index)
NTIS (National Technical Information Service)
Oceanic Abstracts

APPENDIX D.

SOURCES CONTAINING INFORMATION ON CHEMICAL USE (APPLICATION) (Contd.)

Oils, Detergents and Maintenance Specialties (Vol. 2, Formulary)
Organic Chemical Producers' Database (OCPDB)
P/E News (Petroleum/Energy News)
PAPERCHEM
PIRA (Paper, Printing, Packaging Industries Research Association)
Plasticizers, Guidebook and Directory
Plastics Industry Analysis
Pollution Abstracts
Predicasts' Funk and Scott Indexes
Predicasts' International Forecasts
Predicasts' International Time Series
Predicasts' PROMT
Predicasts' U.S. Forecasts
Predicasts' U.S. Time Series
RAPRA Abstracts (Rubber and Plastics Research Association)
Surface Coatings Abstracts
Toxicology Data Bank, (TDB)
Tulsa
Uses and Applications of Chemicals and Related Materials
World Textiles

APPENDIX E.

SOURCES CONTAINING INFORMATION ON CONSUMPTION BY USE

Chemical Economics Handbook
Chemical Origins and Markets
Chemical Profiles. Chemical Marketing Reporter
Chemical Week
Economics Abstracts International
Environmental Chemicals Data and Information Network (ECDIN)
Faith, Keyes and Clark's Industrial Chemicals
Imports of Benzenoid Chemicals. U.S. International Trade Commission
Kirk-Othmer Encyclopedia of Chemical Technology
The Kline Guide to the Chemical Industry
The Merck Index
Plastics Industry Analysis
Predicasts' International Forecasts
Predicasts' International Time Series
Predicasts' PROMT
Predicasts' U.S. Forecasts
Predicasts' U.S. Time Series
RAPRA Abstracts (Rubber and Plastics Research Association)
A Study of Industrial Data on Candidate Chemicals for Testing
Surface Coatings Abstracts
Toxicology Data Bank, (TDB)
World Textiles

APPENDIX F.

SOURCES CONTAINING INFORMATION ON PRICE

ABI/Inform
American Statistics Index, ASI
APILIT (American Petroleum Institute refining literature)
Chemical Economics Handbook
Chemical Industry Notes
Chemical Origins and Markets
Chemical Profiles. Chemical Marketing Reporter
Chemical Week
Economic Abstracts International
Faith, Keyes and Clark's Industrial Chemicals
The Fertilizer Index
Food, Science and Technology Abstracts, FSTA
Kirk - Othmer Encyclopedia of Chemical Technology
The Kline Guide to the Chemical Industry
Organic Chemical Producers' Database (OCPDB)
P/E News (Petroleum/Energy News)
Petroleum Facts and Figures
PIRA (Paper, Printing, Packaging Industries Research Association)
Predicasts' Funk and Scott Indexes
Predicasts' International Forecasts
Predicasts' International Time Series
Predicasts' PROMT
Predicasts' U.S. Forecasts
Predicasts' U.S. Time Series
RAPRA Abstracts (Rubber and Plastics Research Association)
A Study of Industrial Data on Candidate Chemicals for Testing
Surface Coatings Abstracts
Synthetic Organic Chemicals: United States Production and Sales
Tulsa
U.S. Exports
World Textiles

APPENDIX G.

SOURCES CONTAINING INFORMATION ON PRODUCERS

Adhesives Redbook
American Statistics Index, ASI
APILIT (American Petroleum Institute refining literature)
Chem Sources, USA
Chemical Economics Handbook
Chemical Industry Notes
Chemical Materials Catalog
Chemical Monograph Referral Center (CHEMRIC)
Chemical Profiles. Chemical Marketing Reporter
Chemical Synonyms and Trade Names
Chemical Trade Names and Commercial Synonyms
Chemical Week
Chemical Week Buyers' Guide Issue
Chemicals in Commerce Information System (CICIS)
Colour Index
Commercial Names and Sources
Commercial Organic Flocculants
Commercially Available Chemical Agents for Paper and Board Manufacturers
Dry Strength Additives
Economic Abstracts International
Elastomeric Materials
Encyclopedia of Surface-Active Agents
Environmental Chemicals Data and Information Network (ECDIN)
Faith, Keyes and Clark's Industrial Chemicals
Foams
Kirk-Othmer Encyclopedia of Chemical Technology
The Kline Guide to the Chemical Industry
OPD Chemical Buyers' Directory
Oils, Detergents and Maintenance Specialties (Vol. 2, Formulary)
Organic Chemical Producers' Database (OCPDB)
P/E News (Petroleum/Energy News)
Petroleum Facts and Figures
PIRA (Paper, Printing, Packaging Industries Research Association)
Predicasts' Funk and Scott Indexes
Predicasts' International Forecasts
Predicasts' International Time Series
Predicasts' PROMT
Predicasts' U.S. Forecasts
Predicasts' U.S. Time Series
RAPRA Abstracts (Rubber and Plastics Research Association)
Surface Coatings Abstracts
Synthetic Organic Chemicals: United States Production and Sales
Toxicology Data Bank, (TDB)
Tulsa
U.S. Exports

APPENDIX H.

SOURCES CONTAINING INFORMATION ON PRODUCTION/SALES VOLUME

ABI/Inform
American Statistics Index, ASI
APILIT (American Petroleum Institute refining literature)
Chemical Economics Handbook
Chemical Industry Notes
Chemical Monograph Referral Center (CHEMRIC)
Chemical Origins and Markets
Chemical Profiles. Chemical Marketing Reporter
Chemical Week
Chemicals in Commerce Information System (CICIS)
Domestic and Industrial Chemical Specialties
Economic Abstracts International
Environmental Chemicals Data and Information Network (ECDIN)
Faith, Keyes and Clark's Industrial Chemicals
Fert Flash
The Fertilizer Index
Handbook of Water-Soluble Gums and Resins
Kirk-Othmer Encyclopedia of Chemical Technology
The Kline Guide to the Chemical Industry
OPD Chemical Buyers' Directory
Oils, Detergents and Maintenance Specialties (Vol. 2, Formulary)
Organic Chemical Producers' Database (OCPDB)
P/E News (Petroleum/Energy News)
Petroleum Facts and Figures
PIRA (Paper, Printing, Packaging Industries Research Association)
Plasticizers. Guidebook and Directory
Plastics Industry Analysis
Predicasts' Funk and Scott Indexes
Predicasts' International Forecasts
Predicasts' International Time Series
Predicasts' PROMT
Predicasts' U.S. Forecasts
Predicasts' U.S. Time Series
RAPRA Abstracts (Rubber and Plastics Research Association)
A Study of Industrial Data on Candidate Chemicals for Testing
Surface Coatings Abstracts
Synthetic Organic Chemicals: United States Production and Sales
Toxicology Data Bank, (TDB)
Tulsa
U.S. Exports
World Textiles

APPENDIX I.

SOURCES CONTAINING INFORMATION ON PHYSICAL/CHEMICAL PROPERTIES

Adhesives: Guidebook and Directory
Chemical Abstracts On-line
Chemical Monograph Referral Center (CHEMRIC)
Chemical Specialties
Chemical Week
Chemical Week Buyers' Guide Issue
Colour Index
Commercial Organic Flocculants
The Condensed Chemical Dictionary
Dictionary of Commercial Chemicals
Elastomeric Materials
Encyclopedia of Chemistry
Environmental Chemicals Data and Information Network (ECDIN)
Faith, Keyes and Clark's Industrial Chemicals
Foams
Handbook of Adhesives
Handbook of Cosmetic Materials
Handbook of Materials and Processes for Electronics
Handbook of Water-Soluble Gums and Resins
Industrial Solvents Handbook
ISMEC (Information Service in Mechanical Engineering)
Kirk-Othmer Encyclopedia of Chemical Technology
Materials Handbook
The Merck Index
Organic Chemical Producers' Database (OCPDB)
Plasticizers. Guidebook and Directory
Toxicology Data Bank, (TDB)

APPENDIX J.

SOURCES CONTAINING INFORMATION ON OTHER SUBJECTS

A. Synonyms, Trade Names

Chemical Dictionary Files On-line
Chemical Synonyms and Trade Names
Chemical Trade Names and Commercial Synonyms
CHEMSIS
Commercially Available Chemical Agents for Paper and Board Manufacturers
The Condensed Chemical Dictionary
Environmental Chemicals Data and Information Network (ECDIN)
Handbook of Water-Soluble Gums and Resins
Organic Chemical Producers' Database (OCPDB)
Toxicology Data Bank, (TDB)

B. Formulations

Handbook of Adhesives
Handbook of Water-Soluble Gums and Resins
Oils, Detergents and Maintenance Specialties (Vol. 2, Formulary)

C. Import or Export Data

Imports of Benzenoid Chemicals. U.S. International Trade Commission
P/E News (Petroleum/Energy News)
A Study of Industrial Data on Candidate Chemicals for Testing
Toxicology Data Bank, (TDB)
U.S. Imports for Consumption and General Imports (Report FT246)
U.S. Exports